

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,6 m 2  
 Edition : 01.02.90  
 Replaces : 28.9.89  
 Test oil : ISO-4113

Combination no. : 0 400 846 570

Injection pump  
 Pump designation : PES6A95D320RS2770  
 EP type number : 0 410 896 905  
 Governor  
 Governor design. : RQV350...1350AB1236-  
 2R

Governer no. : 0 420 213 111

Customer-spec. information  
 Customer : NAVISTAR

Engine : DTA-360

1st version kW : 134.0  
 Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder  
 assembly : 1 688 901 110

Opening  
 pressure, bar : 250...253

Orifice plate  
 diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness : 6.00X2.00X600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1350

Rack travel in mm : 11.10...11.20

Del.quantity cm<sup>3</sup>/ : 7.3...7.5

100 s: (7.1...7.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.8...6.0

Del.quantity cm<sup>3</sup>/ : 1.7...2.1

100 s: (1.4...2.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 7.30...7.50

2nd speed rpm : 1460

travel mm : 8.10...8.50

3rd speed rpm : 550

travel mm : 3.10...3.50

4th speed rpm : 350

travel mm : 1.30...1.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1535

Rack travel in mm : 6.70...9.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1350

Aneroid pressure h: 700

Del.quantity : 73.5...75.5  
1000 : (71.5...77.5)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 46...54

#### Testing:

1st rack travel in: 10.10  
Speed rpm : 1405...1435  
2nd rack travel in: 4.00  
Speed rpm : 1515...1525  
4th rack travel in: 1600  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 8...16

#### Testing:

Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 5.80...6.00

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 11.10...11.20

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.50...8.70  
2nd pressure hPa : 170  
Rack travel in m: 9.00...9.10  
3rd pressure hPa : 300  
Rack travel in m: 10.10...10.50

#### START CUT-OUT

Speed 1/min : 280 (300)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 55.0...59.0  
1000 s: (53.0...61.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.10  
Speed rpm : 1405...1435

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.80...6.00  
Del.quantity cm<sup>3</sup>/ : 17.0...21.0  
1000 s: (14.5...23.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

Adjust stop lever to 0.5...1.0 mm 835C93  
before stop.

Start-of-delivery mark is at start of  
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,6 w  
 Edition : 01.02.90  
 Replaces : 28.9.89  
 Test oil : ISO-4113  
 Combination no. : 0 400 846 572  
 Injection pump  
 Pump designation : PES6A95D320RS2779  
 EP type number : 0 410 896 903  
 Governor  
 Governor design. : RQV350...1350AB1236-5R  
 Govenner no. : 0 420 213 115

Customer-spec. information  
 Customer : NAVISTAR

Engine : DTA 360

1st version kW : 138.0  
 Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder  
 assembly : 1 688 901 110

Opening  
 pressure, bar : 250...253

Orifice plate  
 diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

A03

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1350  
 Rack travel in mm : 12.40...12.50  
 Del.quantity cm<sup>3</sup>/ : 8.5...8.7  
 100 s: (8.3...8.9)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.6)

2nd speed rpm : 350.0  
 Rack travel in mm : 5.9...6.1  
 Del.quantity cm<sup>3</sup>/ : 1.7...2.1  
 100 s: (1.5...2.3)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350  
 travel mm : 7.30...7.50  
 2nd speed rpm : 1460  
 travel mm : 8.10...8.50  
 3rd speed rpm : 550  
 travel mm : 3.10...3.70  
 4th speed rpm : 350  
 travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1350  
 Aneroid pressure h: 900  
 Del.quantity : 85.5...87.5  
 1000 : (83.5...89.5)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

RATED SPEED

1st version  
Control lever  
position degrees: 44...52

Testing:  
1st rack travel in: 11.50  
Speed rpm : 1400...1430  
2nd rack travel in: 4.00  
Speed rpm : 1530...1540  
4th rack travel in: 1625  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 11...19

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION  
Speed rpm : 350...500

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.40...12.50

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.80...10.00  
2nd pressure hPa : 240  
Rack travel in m: 10.60...10.70  
3rd pressure hPa : 425  
Rack travel in m: 11.70...12.10

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 68.5...72.5  
1000 s: (66.5...74.5)

BREAKAWAY

AD4

1st version  
1mm rack travel less than  
full load rack tr: 11.50  
Speed rpm : 1400...1430

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Del.quantity cm3/ : 17.0...21.0  
1000 s: (15.0...23.0)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks: : NAVISTAR #1815226C91

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark is at start of  
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,6 w 1  
 Edition : 01.02.90  
 Replaces : 28.9.89  
 Test oil : ISO-4113

Combination no. : 0 400 846 573

Injection pump  
 Pump designation : PES6A95D32ORS2779  
 EP type number : 0 410 896 903  
 Governor  
 Governor design. : RQV350...1350AB1236-6R  
 Governor no. : 0 420 213 116

Customer-spec. information  
 Customer : NAVISTAR

Engine : DT 360

1st version kW : 127.0  
 Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder  
 assembly : 1 688 901 110

Opening  
 pressure, bar : 250...253

Orifice plate  
 diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

A05

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)  
 Rack travel in mm : 10.50  
 Firing order : 1-5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1350

Rack travel in mm : 12.30...12.40

Del.quantity cm<sup>3</sup>/ : 8.3...8.5

100 s: (8.1...8.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0  
 Rack travel in mm : 5.9...6.1  
 Del.quantity cm<sup>3</sup>/ : 1.7...2.1  
 100 s: (1.5...2.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350  
 travel mm : 7.30...7.50

2nd speed rpm : 1460  
 travel mm : 8.10...8.50

3rd speed rpm : 550  
 travel mm : 3.10...3.70

4th speed rpm : 350  
 travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1350  
 Aneroid pressure h: 900  
 Del.quantity : 83.5...85.5  
 1000 : (81.5...87.5)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

RATED SPEED

1st version  
Control lever  
position degrees: 44...52

Testing:  
1st rack travel in: 11.30  
Speed rpm : 1390...1420  
2nd rack travel in: 4.00  
Speed rpm : 1525...1535  
4th rack travel in: 1625  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 11...19

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION  
Speed rpm : 350...500

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.30...12.40

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.60...9.80  
2nd pressure hPa : 185  
Rack travel in m: 10.30...10.40  
3rd pressure hPa : 325  
Rack travel in m: 11.40...11.80

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 67.0...71.0  
1000 s: (65.0...73.0)

BREAKAWAY

A06

1st version  
1mm rack travel less than  
full load rack tr: 11.30  
Speed rpm : 1390...1420

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 16.20...17.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Del.quantity cm<sup>3</sup>/ : 17.0...21.0  
1000 s: (15.0...23.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:  
: NAVISTAR #1815265C91

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark is at start of  
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,6 w 2  
 Edition : 06.03.90  
 Replaces : 28.9.89  
 Test oil : ISO-4113

Combination no. : 0 400 846 574

Injection pump  
 Pump designation : PES6A95D32ORS2779  
 EP type number : 0 410 896 903  
 Governor  
 Governor design. : RQV350...1300AB1236-4R

Governer no. : 0 420 213 117

Customer-spec. information  
 Customer : NAVISTAR

Engine : DT 466

1st version kW : 138.0  
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder  
 assembly : 1 688 901 110

Opening  
 pressure, bar : 250...253

Orifice plate  
 diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

A07

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 9.2...9.4

100 s: (9.0...9.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.0...6.2

Del.quantity cm3/ : 1.7...2.1

100 s: (1.5...2.3)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 7.30...7.50

2nd speed rpm : 1460

travel mm : 8.10...8.50

3rd speed rpm : 550

travel mm : 3.10...3.70

4th speed rpm : 350

travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 900

Del.quantity : 92.5...94.5

1000 : (90.5...96.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version  
Control lever  
position degrees: 42...50

Testing:  
1st rack travel in: 12.00  
Speed rpm : 1355...1385  
2nd rack travel in: 4.00  
Speed rpm : 1505...1515  
4th rack travel in: 1600  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 11...19

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 6.00...6.20

CONSTANT REGULATION  
Speed rpm : 350...500

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.00...13.10

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.70...11.90  
2nd pressure hPa : 175  
Rack travel in m: 12.00...12.10  
3rd pressure hPa : 340  
Rack travel in m: 12.40...12.80

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 89.5...93.5  
1000 s: (87.5...95.5)

BREAKAWAY

A08

1st version  
1mm rack travel less than

full load rack tr: 12.00  
Speed rpm : 1355...1385

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 16.20...17.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.00...6.20  
Del. quantity cm<sup>3</sup>/ : 17.0...21.0  
1000 s: (15.0...23.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks: : NAVISTAR #1815266C91

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark is at start of  
delivery of cylinder 1



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RAB 9,7 b 2  
 Edition : 09.11.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 846 576  
 Injection pump  
 Pump designation : PES6A95D420LS2595  
 EP type number : 0 410 896 930  
 Governor  
 Governor design. : RQ200/1050AB1246  
 Governor no. : 0 420 201 647

Customer-spec. information  
 Customer : RABA

Engine : D2156 MT6U

1st version kW : 154.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.05)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.40...12.50

Del.quantity cm<sup>3</sup>/ : 12.4...12.6

100 s: (12.2...12.8)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 200.0

Rack travel in mm : 6.9...7.1

Del.quantity cm<sup>3</sup>/ : 1.1...1.5

100 s: (0.8...1.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 500

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 700

Del.quantity : 124.5...126.5

1000 : (122.5...128.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 500

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.40

Speed rpm : 1095...1110

2nd rack travel in: 4.00

Speed rpm : 1130...1160

4th rack travel in: 1225  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 200  
Rack travel in mm : 6.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 8.00  
Speed rpm : 200  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.00  
Speed rpm : 280...320

#### TORQUE CONTROL

Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 12.40...12.50  
2nd speed rpm : 500  
Rack travel in m: 13.20...13.30  
3rd speed rpm : 735  
Rack travel in m: 13.00...13.10  
4th speed rpm : 840  
Rack travel in m: 12.50...12.70

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 13.20...13.30

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.70...10.80  
2nd pressure hPa : 220  
Rack travel in m: 12.40...12.50  
3rd pressure hPa : 150  
Rack travel in m: 11.10...11.30

#### START CUT-OUT

Speed 1/min : 140 (160)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 600  
Del.quantity cm3/ : 120.5...123.5  
1000 s: (118.0...126.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 79.0...81.0  
1000 s: (77.0...83.0)

#### RACK STOP ADJUSTMENT

Speed rpm : 500

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.40  
Speed rpm : 1095...1110

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 156.0...166.0  
1000 s: (153.0...169.0)  
Rack travel in mm : 17.50...17.70

#### Remarks:

: IKARUS

Set idle stop at 200 min -1 to a  
control-rod travel of 6.4 mm

#### APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 6,1 h 1  
 Edition : 24.11.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 846 577  
 Injection pump  
 Pump designation : PES6A85D410RS2591  
 EP type number : 0 410 886 903  
 Governor  
 Governor design. : RQ300/1325AB1247L  
 Governor no. : 0 420 200 114

Customer-spec. information  
 Customer : KHD

Engine : BF6L913

1st version kW : 124.0  
 Rated speed : 2650

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60  
 : (2.45...2.65)  
 Rack travel in mm : 9.00...12.00

A11

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1325

Rack travel in mm : 12.60...12.70

Del.quantity cm<sup>3</sup>/ : 8.6...8.7

100 s: (8.4...8.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.4)

2nd speed rpm : 300.0

Rack travel in mm : 8.4...8.6

Del.quantity cm<sup>3</sup>/ : 1.0...1.6

100 s: (0.8...1.8)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 1325

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1325

Aneroid pressure h: 700

Del.quantity : 86.5...87.5

1000 : (84.5...89.5)

Spread cm<sup>3</sup> : 3.00

1000 : (4.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 1325

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.60

Speed rpm : 1370...1385

2nd rack travel in: 4.00

Speed rpm : 1450...1480

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.0

Testing:

Speed rpm : 200  
Minimum rack trave: 6.40  
Speed rpm : 300  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 505...545

TORQUE CONTROL

Dimension a mm : 0.55  
Torque control curve - 1st version  
1st speed rpm : 1325  
Rack travel in m: 12.60...12.70  
3rd speed rpm : 815  
Rack travel in m: 13.70...13.90  
4th speed rpm : 1070  
Rack travel in m: 12.90...13.10

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 11.60...11.80

Measurement

Speed 1/min : 800

1st pressure hPa : 700  
Rack travel in m: 13.00...13.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 83.0...85.0  
1000 s: (80.5...87.5)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 55.0...56.0  
1000 s: (53.0...58.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.60  
Speed rpm : 1370...1385

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 120.0...130.0  
1000 s: (117.0...133.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:  
Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 15,0 c1  
 Edition : 30.03.90  
 Replaces : 27.10.89  
 Test oil : ISO-4113

Combination no. : 0 400 858 006

Injection pump  
 Pump designation : PES8A95D412LS2334  
 EP type number : 0 410 898 998  
 Governor  
 Governor design. : RQ250/1100AB793DL  
 Governor no. : 0 420 202 238

Customer-spec. information  
 Customer : MAN

Engine : D2858M4

1st version kW : 304.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 681 343 009

Opening  
 pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.70...1.80  
 : (1.65...1.75)

Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 7- 8- 4- 5-  
 6- 3

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.10...11.20

Del.quantity cm<sup>3</sup>/ : 11.5...11.7  
 100 s: (11.3...11.9)

Spread cm<sup>3</sup> : 0.3  
 100 s: (0.6)

2nd speed rpm : 250.0  
 Rack travel in mm : 5.9...6.1  
 Del.quantity cm<sup>3</sup>/ : 1.0...1.6  
 100 s: (0.7...1.8)

Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 700  
 Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Del.quantity : 115.5...117.5  
 1000 : (113.5...119.5)

Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 700  
 Rack travel in mm : 16.0

Testing:  
 1st rack travel in: 10.10  
 Speed rpm : 1145...1160  
 2nd rack travel in: 4.00  
 Speed rpm : 1195...1225

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6.0

Testing:

Speed rpm : 100  
Minimum rack trave: 7.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 370...410

TORQUE CONTROL

Dimension a mm : 0.15  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.10...11.20  
2nd speed rpm : 500  
Rack travel in m: 11.40...11.50  
3rd speed rpm : 1135  
Rack travel in m: 11.20...11.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500  
Del.quantity cm3/ : <121.0  
1000 s: (<123.5)  
Speed rpm : 800  
Del.quantity cm3/ : 116.5...119.5  
1000 s: (114.0...122.0)

RACK STOP ADJUSTMENT

Speed rpm : 500

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10  
Speed rpm : 1145...1160

Remarks:

: MAN-NR. 1-7545

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM 3,1 b 2  
 Edition : 30.03.90  
 Replaces : 10.2.89  
 Test oil : ISO-4113

Combination no. : 0 400 863 008

Injection pump  
 Pump designation : PES3A90D320/3RS2658  
 EP type number : 0 410 893 004  
 Governor  
 Governor design. : RSV325...1500A2C505-3R  
 Governor no. : 0 420 233 229

Customer-spec. information  
 Customer : MWM

Engine : D226B-3

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder assembly : 0 681 343 009

Opening pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05  
 : (2.90...3.10)

Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 3

Phasing : 0-120-240

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...0.00  
 & maximum rack tra: 21.00  
 Difference ° CS : 3.50...4.50

BASIC SETTING

1st speed rpm : 1100

---

Rack travel in mm : 11.20...11.30

---

Del.quantity cm<sup>3</sup>/ : 8.9...9.0  
 100 s: (8.7...9.2)

---

Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

---

2nd speed rpm : 325.0  
 Rack travel in mm : 9.7...9.9  
 Del.quantity cm<sup>3</sup>/ : 4.6...5.2  
 100 s: (4.4...5.4)

Spread cm<sup>3</sup> : 0.2  
 100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Del.quantity : 89.5...90.5  
 1000 : (87.5...92.5)

Spread cm<sup>3</sup> : 3.00  
 1000 : (5.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 39...47

Testing:  
 1st rack travel in: 10.20  
 Speed rpm : 1140...1150

2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
3rd rack travel in: 4.00  
Speed rpm : 1210...1240  
4th rack travel in: 1375  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control Lever  
position degrees: 13...21  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 9.3  
Speed rpm : 325  
Rack travel in mm : 9.70...9.90  
Rack travel in mm : 2.00  
Speed rpm : 480...540

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.20...11.30  
2nd speed rpm : 500  
Rack travel in m: 11.20...11.40

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.20  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 115.0  
1000 s: ( 112.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 3,0 f  
 Edition : 06.04.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 863 016  
 Injection pump  
 Pump designation : PES3A85D410/3RS2780  
 EP type number : 0 410 883 987  
 Governor  
 Governor design. : RSV325...1250A2C2239  
 -1L  
 Governor no. : 0 420 232 533

Customer-spec. information  
 Customer : KHD

Engine : F3L912 F

1st version kW : 40.0  
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05  
 : (2.90...3.10)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 2

Phasing : 0-120-240

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.40...11.50

Del.quantity cm<sup>3</sup>/ : 6.4...6.5

100 s: (6.2...6.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

2nd speed rpm : 325.0

Rack travel in mm : 8.1...8.3

Del.quantity cm<sup>3</sup>/ : 1.0...1.6

100 s: (0.8...1.8)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del.quantity : 64.0...65.0

1000 : (62.0...67.0)

Spread cm<sup>3</sup> : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 98...106

Testing:

1st rack travel in: 10.40

Speed rpm : 1290...1300

2nd rack travel in: 4.00

Speed rpm : 1345...1375  
3rd rack travel in: 4.00  
Speed rpm : 1355...1385  
4th rack travel in: 1530  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 68...76  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 325  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 420...450

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 11.40...-11.50  
2nd speed rpm : 500  
Rack travel in m: 11.60...11.70  
3rd speed rpm : 840  
Rack travel in m: 11.50...11.60

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 55.0...57.0  
1000 s: (52.5...59.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.40  
Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 115.0...125.0  
1000 s: (112.0...128.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 3,0 f 1  
Edition : 02.05.90  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 400 863 017  
  
Injection pump  
Pump designation : PES3A85D410/3RS2780  
EP type number : 0 410 883 987  
Governor  
Governor design. : RSV325...900A4C2239-  
2L  
Governor no. : 0 420 232 538  
  
Customer-spec. information  
Customer : KHD  
  
Engine : F3L912F  
  
1st version kw : 25.0  
Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 417 413 000  
  
Inlet press., bar : 1.50  
  
Test nozzle holder  
assembly : 0 681 343 009  
  
Opening  
pressure, bar : 172...175  
  
Test Lines : 1 680 750 014  
  
Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
  
Prestroke mm : 2.95...3.05  
: (2.90...3.10)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 2

Phasing : 0-120-240  
Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 710  

---

Rack travel in mm : 11.70...11.80  

---

Del. quantity cm<sup>3</sup>/ : 5.6...5.7  
100 s : (5.4...5.9)  

---

Spread cm<sup>3</sup> : 0.2  
100 s : (-)

2nd speed rpm : 325.0  
Rack travel in mm : 8.1...8.3  
Del. quantity cm<sup>3</sup>/ : 1.1...1.7  
100 s : (0.9...1.9)  
Spread cm<sup>3</sup> : 0.2  
100 s : (0.4)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 3.75

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 710  
Del. quantity : 56.5...57.5  
1000 : (54.5...59.5)  
Spread cm<sup>3</sup> : 2.50

## RATED SPEED

1st version  
Control lever  
position degrees: 90...98

Testing:  
1st rack travel in: 10.70  
Speed rpm : 748...753  
2nd rack travel in: 4.00  
Speed rpm : 789...804  
4th rack travel in: 940  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 72...80

Setting point w/out bumper spring

Speed rpm : 325

Rack travel in mm : 6.0

Testing:

Speed rpm : 100

Minimum rack trave: 19.50

Speed rpm : 325

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 320...380

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 752

Del.quantity cm3/ : 48.0...50.0

1000 s: (45.5...52.5)

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 110.0...120.0

1000 s: (107.0...123.0)

Rack travel in mm : 19.50...21.00

Remarks:

:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 1 g 3  
 Edition : 15.12.89  
 Replaces : 2.2.88  
 Test oil : ISO-4113

Combination no. : 0 400 864 054

Injection pump  
 Pump designation : PES4A85D410/3RS2638  
 EP type number : 0 410 884 950  
 Governor  
 Governor design. : RSV325...1150A0C2168  
 L  
 Governor no. : 0 420 232 364

Customer-spec. information  
 Customer : KHD

Engine : BF4L913

1st version kW : 66.0  
 Rated speed : 2300  
 2nd version kW : 60.0  
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60  
 : (2.45...2.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1110

---

Rack travel in mm : 12.30...12.40

---

Del.quantity cm<sup>3</sup>/ : 8.0...8.1  
 100 s: (7.8...8.3)

---

Spread cm<sup>3</sup> : 0.3  
 100 s: (0.4)

---

2nd speed rpm : 325.0  
 Rack travel in mm : 8.1...8.3  
 Del.quantity cm<sup>3</sup>/ : 0.9...1.5  
 100 s: (0.7...1.7)

Spread cm<sup>3</sup> : 0.2  
 100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1110  
 Del.quantity : 80.0...81.0  
 1000 : (78.0...83.0)

Spread cm<sup>3</sup> : 3.00  
 1000 : (4.50)

2nd version  
 Speed rpm : 1150  
 Del.quantity cm<sup>3</sup>/ : 74.5...75.5  
 1000 s: (72.5...77.5)

Spread cm<sup>3</sup> : 3.00  
 1000 s: (4.50)

RATED SPEED

1st version

Control lever  
position degrees: 49...57

Testing:  
1st rack travel in: 11.30  
Speed rpm : 1155...1165  
2nd rack travel in: 4.00  
Speed rpm : 1250...1280  
3rd rack travel in: 4.00  
Speed rpm : 1320...1350  
4th rack travel in: 1430  
Speed rpm : 0.30...1.40

2nd version  
Control lever  
position degrees: 52...60

Testing:  
1st rack travel in: 9.60  
Speed rpm : 1220...1230  
2nd rack travel in: 4.00  
Speed rpm : 1325...1355  
4th rack travel in: 1475  
Speed rpm : 0.30...1.70

LOW IDLE 1  
Control lever  
position degrees: 26...34  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 7.2

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 325  
Rack travel in mm : 7.60...7.80  
Rack travel in mm : 2.00  
Speed rpm : 530...580

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1110  
Rack travel in m: 12.30...12.40  
2nd speed rpm : 500  
Rack travel in m: 13.10...13.20  
4th speed rpm : 940  
Rack travel in m: 12.70...12.90

Torque control curve - 2nd version  
1st speed rpm : 1150  
Rack travel in m: 10.5...10.6  
2nd speed rpm : 500  
Rack travel in m: 11.2...11.3  
3rd speed rpm : 900  
Rack travel in m: 10.9...11.2

FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 700  
Del.quantity cm3/ : 79.5...81.5  
1000 s: (77.0...84.0)

2nd version  
Speed rpm : 800  
Del.quantity cm3/ : 65.5...68.5  
1000 s: (63.5...70.5)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.30  
Speed rpm : 1155...1165

2nd version  
1mm rack travel less than  
full load rack tr: 9.50  
Speed rpm : 1220...1230

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 100.0...110.0  
1000 s: (97.0...113.0)  
Rack travel in mm : 16.80...17.20

Remarks:  
: S29=DX 92=DX4.70 (1)  
: S28=DX 86=DX4.50 (2)

APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM 4,1 b 1  
 Edition : 05.08.88  
 Replaces : 1.86  
 Test oil : ISO-4113  
  
 Combination no. : 0 400 864 057  
  
 Injection pump  
 Pump designation : PES4A90D320/3RS2659  
 EP type number : 0 410 894 028  
 Governor  
 Governor design. : RSV325...1500A2C505-2R  
 Govenor no. : 0 420 233 196

Customer-spec. information  
 Customer : MWM

Engine : D226B-4

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05  
 : (2.90...3.10)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...0.00  
 & maximum rack tra: 21.00  
 Difference ° CS : 3.50...4.50

## BASIC SETTING

1st speed rpm : 1500

Rack travel in mm : 11.20...11.30

Del.quantity cm<sup>3</sup>/ : 8.9...9.0

100 s: (8.7...9.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

2nd speed rpm : 325.0

Rack travel in mm : 7.0...7.2

Del.quantity cm<sup>3</sup>/ : 0.8...1.4

100 s: (0.6...1.6)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.75

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1500

Del.quantity : 89.5...90.5

1000 : (87.5...92.5)

Spread cm<sup>3</sup> : 3.00

1000 : (5.00)

## RATED SPEED

1st version

Control lever

position degrees: 59...67

Testing:

1st rack travel in: 9.50

Speed rpm : 1540...1550

2nd rack travel in: 4.00  
Speed rpm : 1590...1620  
3rd rack travel in: 4.00  
Speed rpm : 1615...1645  
4th rack travel in: 1780  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control Lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 6.6

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 325  
Rack travel in mm : 7.00...7.20  
Rack travel in mm : 2.00  
Speed rpm : 465...525

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.50  
Speed rpm : 1540...1550

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 131.0...141.0  
1000 s: (128.0...144.0)  
Rack travel in mm : 19.50...21.00

Remarks:  
:



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 1 g 43  
 Edition : 04.05.90  
 Replaces : 7.4.89  
 Test oil : ISO-4113  
 Combination no. : 0 400 864 074  
 Injection pump  
 Pump designation : PES4A85D410/3RS2638  
 EP type number : 0 410 884 950  
 Governor  
 Governor design. : RSV325..1150A0C2168-4L  
 Governor no. : 0 420 232 524

Customer-spec. information  
 Customer : KHD

Engine : BF4L913T

1st version kW : 60.0  
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60  
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 11.40...11.50

Del.quantity cm<sup>3</sup>/ : 7.1...7.2

100 s: (6.9...7.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

2nd speed rpm : 325.0

Rack travel in mm : 8.8...9.0

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.4...2.4)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 71.5...72.5

1000 : (69.5...74.5)

Spread cm<sup>3</sup> : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 100...108

Testing:

1st rack travel in: 10.40

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1270...1300

3rd rack travel in: 4.00

Speed rpm : 1330...1360  
4th rack travel in: 1500  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 76...84  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 8.4

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 325  
Rack travel in mm : 8.80...9.00  
Rack travel in mm : 2.00  
Speed rpm : 720...780

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 11.40...11.50  
2nd speed rpm : 500  
Rack travel in m: 12.50...12.60  
3rd speed rpm : 940  
Rack travel in m: 11.90...12.00

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 71.5...73.5  
1000 s: (69.0...76.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than  
full load rack tr: 10.40  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...140.0  
1000 s: (127.0...143.0)  
Rack travel in mm : 19.50...21.00

#### Remarks:

: DX 3 X

#### APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 4,1 i  
 Edition : 06.04.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 864 075  
 Injection pump  
 Pump designation : PES4A85D410/3RS2781  
 EP type number : 0 410 884 945  
 Governor  
 Governor design. : RSV325...1250A2C2239  
 -1L  
 Governor no. : 0 420 232 533

Customer-spec. information  
 Customer : KHD

Engine : F4L912F

1st version kW : 54.0  
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05  
 : (2.90...3.10)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.40...11.50

Del.quantity cm<sup>3</sup>/ : 6.4...6.5

100 s: (6.2...6.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

2nd speed rpm : 325.0

Rack travel in mm : 8.1...8.3

Del.quantity cm<sup>3</sup>/ : 1.0...1.6

100 s: (0.8...1.8)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del.quantity : 64.0...65.0

1000 : (62.0...67.0)

Spread cm<sup>3</sup> : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 98...106

Testing:

1st rack travel in: 10.40

Speed rpm : 1290...1300

2nd rack travel in: 4.00

Speed rpm : 1345...1375

3rd rack travel in: 4.00

Speed rpm : 1355...1385  
4th rack travel in: 1530  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control Lever  
position degrees: 68...76  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 325  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 420...480

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 11.40...11.50  
2nd speed rpm : 500  
Rack travel in m: 11.60...11.70  
3rd speed rpm : 840  
Rack travel in m: 11.50...11.60

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 55.0...57.0  
1000 s: (52.5...59.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.40  
Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 115.0...125.0  
1000 s: (112.0...128.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM 4,1 b 2  
 Edition : 13.12.89  
 Replaces : -  
 Test oil : ISO-4113  
  
 Combination no. : 0 400 864 076  
  
 Injection pump  
 Pump designation : PES4A90D320/3RS2659  
 EP type number : 0 410 894 028  
 Governor  
 Governor design. : RSV325...1250AOC2182  
 -7R  
 Governor no. : 0 420 233 258  
  
 Customer-spec. information  
 Customer : MWM  
  
 Engine : TD224/04

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
  
 Overflow valve  
 : 1 417 413 000  
  
 Inlet press., bar : 1.50  
  
 Test nozzle holder  
 assembly : 0 681 343 009  
  
 Opening  
 pressure, bar : 172...175  
  
 Test lines : 1 680 750 014  
  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05  
 : (2.90...3.10)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00  
 & maximum rack tra: 21.00  
 Difference ° CS : 3.50...4.50

## BASIC SETTING

1st speed rpm : 1250  


---

 Rack travel in mm : 11.50...11.60  


---

 Del.quantity cm<sup>3</sup>/ : 9.1...9.2  
 100 s: (8.9...9.4)  


---

 Spread cm<sup>3</sup> : 0.3  


---

 100 s: (0.5)

2nd speed rpm : 325.0  
 Rack travel in mm : 7.0...7.2  
 Del.quantity cm<sup>3</sup>/ : 0.8...1.4  
 100 s: (0.6...1.6)  
 Spread cm<sup>3</sup> : 0.2  
 100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1250  
 Aneroid pressure h: 700  
 Del.quantity : 91.5...92.5  
 1000 : (89.5...94.5)  
 Spread cm<sup>3</sup> : 3.00  
 1000 : (5.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 45...53

Testing:  
 1st rack travel in: 10.50

Speed rpm : 1290...1300  
2nd rack travel in: 4.00  
Speed rpm : 1325...1355  
3rd rack travel in: 4.00  
Speed rpm : 1340...1370  
4th rack travel in: 1505  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 325  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 470...530

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 11.50...11.60  
2nd speed rpm : 500  
Rack travel in m: 12.60...12.70  
3rd speed rpm : 890  
Rack travel in m: 11.90...12.10

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 12.60...12.70

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.40...10.50  
2nd pressure hPa : 185  
Rack travel in m: 11.60...11.70  
3rd pressure hPa : 90  
Rack travel in m: 11.00...11.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 800  
Del.quantity cm3/ : 101.0...103.0  
1000 s: (98.5...105.5)

Aneroid pressure h: 185  
Speed rpm : 500  
Del.quantity cm3/ : 79.0...81.0  
1000 s: (76.5...83.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 61.0...63.0  
1000 s: (59.0...65.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.50  
Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 132.0...142.0  
1000 s: (129.0...145.0)  
Rack travel in mm : 19.50...21.00

Remarks: : STILL

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 4,1 j  
 Edition : 05.03.90  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 400 864 077

Injection pump  
 Pump designation : PES4A95D410/3RS2789  
 EP type number : 0 410 894 995  
 Governor  
 Governor design. : RSV325...1150A5C2244  
 L  
 Governor no. : 0 420 232 536

Customer-spec. information  
 Customer : KHD

Engine : F4L913

1st version kW : 68.0  
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270  
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150

---

Rack travel in mm : 12.80...12.90

---

Del. quantity cm<sup>3</sup>/ : 9.0...9.2  
 100 s: (8.8...9.4)

---

Spread cm<sup>3</sup> : 0.3  
 100 s: (0.6)

---

2nd speed rpm : 325.0  
 Rack travel in mm : 8.3...8.5  
 Del. quantity cm<sup>3</sup>/ : 1.0...1.6  
 100 s: (0.7...1.8)

Spread -cm<sup>3</sup> : 0.3  
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1150  
 Del. quantity : 90.0...92.0  
 1000 : (88.0...94.0)

Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 45...53

Testing:  
 1st rack travel in: 11.80  
 Speed rpm : 1190...1200  
 2nd rack travel in: 4.00  
 Speed rpm : 1240...1250  
 3rd rack travel in: 4.00

Speed rpm : 1250...1280  
4th rack travel in: 1415  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 13...21  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 325  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 400...460

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 12.80...12.90  
2nd speed rpm : 500  
Rack travel in m: 13.20...13.30  
4th speed rpm : 1070  
Rack travel in m: 13.00...13.20

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 88.5...91.5  
1000 s: (86.0...94.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than  
full load rack tr: 11.80  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 120.0...13.0  
1000 s: (117.0...16.0)  
Rack travel in mm : 19.50...21.00

Remarks:

: TM 2

#### APPLICATION

Tractor (tractor engines)



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 4,1 i 1  
 Edition : 02.05.90  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 400 864 078

Injection pump  
 Pump designation : PES4A85D410/3RS2781  
 EP type number : 0 410 884 945  
 Governor  
 Governor design. : RSV325...900A4C2239-  
 2L  
 Governor no. : 0 420 232 538

Customer-spec. information  
 Customer : KHD

Engine : F4L912F

1st version kW : 34.0  
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05  
 : (2.90...3.10)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 710

Rack travel in mm : 11.70...11.80

Del.quantity cm<sup>3</sup>/ : 5.6...5.7

100 s: (5.4...5.9)

Spread cm<sup>3</sup> : 0.2

2nd speed rpm : 325.0

Rack travel in mm : 8.1...8.3

Del.quantity cm<sup>3</sup>/ : 1.1...1.7

100 s: (0.9...1.9)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 710

Del.quantity : 56.5...57.5

1000 : (54.5...59.5)

Spread cm<sup>3</sup> : 2.50

RATED SPEED

1st version

Control lever

position degrees: 90...98

Testing:

1st rack travel in: 10.70

Speed rpm : 748...753

2nd rack travel in: 4.00

Speed rpm : 789...804

4th rack travel in: 940

Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever  
position degrees: 72...80  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 6.0

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 325  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 320...380

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 752  
Del.quantity cm3/ : 48.0...50.0  
1000 s: (45.5...52.5)

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 110.0...120.0  
1000 s: (107.0...123.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

#### APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 5,1 d 2  
 Edition : 02.01.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 865 025  
 Injection pump  
 Pump designation : PES5A80D410/3RS2526  
 EP type number : 0 410 885 999  
 Governor  
 Governor design. : RSV325...1250A5C2239  
 L  
 Governor no. : 0 420 232 526

Customer-spec. information  
 Customer : KHD

Engine : F5L912

1st version kW : 68.0  
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test lines : 1 680 750 014  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05  
 : (2.90...3.10)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288  
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250  
 Rack travel in mm : 11.80...11.90  
 Del.quantity cm3/ : 6.9...7.0  
 100 s: (6.8...7.2)  
 Spread cm3 : 0.3  
 100 s: (0.5)  
 2nd speed rpm : 325.0  
 Rack travel in mm : 7.4...7.6  
 Del.quantity cm3/ : 0.8...1.4  
 100 s: (0.6...1.5)  
 Spread cm3 : 0.2  
 100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1250  
 Del.quantity : 69.5...70.5  
 1000 : (68.0...72.0)  
 Spread cm3 : 3.00  
 1000 : (5.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 50...58

Testing:

1st rack travel in: 10.80  
 Speed rpm : 1290...1300  
 2nd rack travel in: 4.00  
 Speed rpm : 1330...1360  
 3rd rack travel in: 4.00

Speed rpm : 1345...1375  
4th rack travel in: 1510  
Speed rpm : 0.30...1.40

Spread cm<sup>3</sup> : 2.50  
1000 s: (4.50)

Remarks:

LOW IDLE 1  
Control lever  
position degrees: 15...23  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 5.5

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 325  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 400...460

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 11.80...11.90  
2nd speed rpm : 750  
Rack travel in m: 11.80...12.00

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 54.5...56.5  
1000 s: (52.5...58.5)  
Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 63.0...65.0  
1000 s: (61.0...67.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.80  
Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 105.0...115.0  
1000 s: (102.0...118.0)

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 7.40...7.60  
Del.quantity cm<sup>3</sup>/ : 8.0...14.0  
1000 s: (6.5...15.5)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 5,1 i  
 Edition : 01.02.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 865 025  
 Injection pump  
 Pump designation : PES5A80D410/3RS2782  
 EP type number : 0 410 885 999  
 Governor  
 Governor design. : RSV325...1250A5C2239  
 L  
 Governor no. : 0 420 232 526

Customer-spec. information  
 Customer : KHD

Engine : F5L912

1st version kW : 68.0  
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test lines : 1 680 750 014  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 2.95...3.05  
 : (2.90...3.10)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288  
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250  
 Rack travel in mm : 11.80...11.90  
 Del. quantity cm<sup>3</sup>/ : 6.9...7.0  
 100 s: (6.8...7.2)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)  
 2nd speed rpm : 325.0  
 Rack travel in mm : 7.4...7.6  
 Del. quantity cm<sup>3</sup>/ : 0.8...1.4  
 100 s: (0.6...1.5)  
 Spread cm<sup>3</sup> : 0.2  
 100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1250  
 Del. quantity : 69.5...70.5  
 1000 : (68.0...72.0)  
 Spread cm<sup>3</sup> : 3.00  
 1000 : (5.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 50...58

Testing:

1st rack travel in: 10.80  
 Speed rpm : 1290...1300  
 2nd rack travel in: 4.00  
 Speed rpm : 1330...1360  
 3rd rack travel in: 4.00

Speed rpm : 1345...1375  
4th rack travel in: 1510  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 15...23  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 325  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 400...460

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 11.80...11.90  
2nd speed rpm : 750  
Rack travel in m: 11.80...12.00

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm3/ : 54.5...56.5  
1000 s: (52.5...58.5)  
Speed rpm : 1000  
Del.quantity cm3/ : 63.0...65.0  
1000 s: (61.0...67.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than  
full load rack tr: 10.80  
Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 105.0...115.0  
1000 s: (102.0...118.0)

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 7.40...7.60  
Del.quantity cm3/ : 8.0...14.0  
1000 s: (6.5...15.5)

Spread cm3 : 2.50  
1000 s: (4.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FOR 5,9 d 1  
 Edition : 06.04.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 866 104E  
 Injection pump  
 Pump designation : PES6A90D210RS2628  
 EP type number : 0 410 896 074  
 Governor  
 Governor design. : RSV325...1200A0C2140  
 L  
 Governor no. : 0 420 232 372

Customer-spec. information  
 Customer : FORD/GB

Engine : DOVER

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test lines : 1 680 750 014  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 2.70...2.80  
 : (2.65...2.85)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1175  
 Rack travel in mm : 11.10...11.20  
 Del.quantity cm<sup>3</sup>/ : 7.8...7.9  
 100 s: (7.6...8.1)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)  
 2nd speed rpm : 350.0  
 Rack travel in mm : 5.2...5.4  
 Del.quantity cm<sup>3</sup>/ : 0.5...1.1  
 100 s: (0.3...1.3)  
 Spread cm<sup>3</sup> : 0.2  
 100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1175  
 Aneroid pressure h: 700  
 Del.quantity : 78.5...79.5  
 1000 : (76.5...81.5)  
 Spread cm<sup>3</sup> : 3.00  
 1000 : (5.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 115...123

Testing:  
 1st rack travel in: 10.10  
 Speed rpm : 1240...1250  
 2nd rack travel in: 4.00  
 Speed rpm : 1360...1390  
 3rd rack travel in: 4.00  
 Speed rpm : 1365...1395  
 4th rack travel in: 1540

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever position degrees: 85...93  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 4.8

Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 350  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 2.00  
Speed rpm : 490...550  
Speed rpm : 625  
Maximum rack trave: 1.00

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1175  
Rack travel in m: 11.10...11.20  
2nd speed rpm : 500  
Rack travel in m: 11.10...11.30

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 11.10...11.20

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.90...10.10  
2nd pressure hPa : 500  
Rack travel in m: 10.70...10.80  
3rd pressure hPa : 380  
Rack travel in m: 10.20...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 44.0...46.0  
1000 s: (42.0...48.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10  
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 76.0...90.0  
1000 s: (73.0...93.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:  
At start of delivery, locating pin  
must latch into slit in pointer.

Test electrically-released starting  
quantity (EES) with 12 volts



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 k 2  
 Edition : 06.03.90  
 Replaces : 15.6.88  
 Test oil : ISO-4113  
 Combination no. : 0 400 866 124  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1250ADC2216  
 -2R  
 Governor no. : 0 420 233 217

## Customer-spec. information

Customer : C.D.C.

Engine : 6 CT 830

1st version kW : 160.0  
 Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 12.00...12.10

Del.quantity cm<sup>3</sup>/ : 12.1...12.3

100 s: (11.9...12.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.7...5.9

Del.quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del.quantity : 121.0...123.0

1000 : (119.0...125.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 58...66

Testing:

1st rack travel in: 11.00  
Speed rpm : 1290...1300  
2nd rack travel in: 4.00  
Speed rpm : 1395...1425  
3rd rack travel in: 4.00  
Speed rpm : 1400...1430  
4th rack travel in: 1500  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 33...41  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.70...5.90

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 12.00...12.10  
2nd speed rpm : 750  
Rack travel in m: 12.40...12.60

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 122.0...126.0  
1000 s: (120.0...128.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.70...5.90  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)

Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

: C.D.C. # 3915982

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 6,1 r  
 Edition : 03.11.89  
 Replaces : 28.11.88  
 Test oil : ISO-4113

Combination no. : 0 400 866 125

Injection pump  
 Pump designation : PES6A85D410/3RS2761  
 EP type number : 0 410 886 895  
 Governor  
 Governor design. : RSV325...1150A8C674-  
 1L  
 Governor no. : 0 420 232 518

Customer-spec. information  
 Customer : KHD

Engine : BF6L913

1st version kW : 112.0  
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60  
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 12.10...12.20

Del.quantity cm<sup>3</sup>/ : 8.4...8.5

100 s: (8.2...8.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

2nd speed rpm : 325.0

Rack travel in mm : 7.5...7.7

Del.quantity cm<sup>3</sup>/ : 0.9...1.5

100 s: (0.7...1.7)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 700

Del.quantity : 84.5...85.5

1000 : (82.5...87.5)

Spread cm<sup>3</sup> : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 48...56

Testing:

1st rack travel in: 11.10

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1225...1255

3rd rack travel in: 4.00  
Speed rpm : 1245...1275  
4th rack travel in: 1410  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 13...21  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 7.1

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 325  
Rack travel in mm : 7.50...7.70  
Rack travel in mm : 2.00  
Speed rpm : 420...480

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 12.10...12.20  
2nd speed rpm : 750  
Rack travel in m: 12.60...12.70  
3rd speed rpm : 855  
Rack travel in m: 12.30...12.50

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 11.50...11.60

#### Measurement

Speed 1/min : 500  
1st pressure hPa : 350  
Rack travel in m: 11.90...12.00  
3rd pressure hPa : 700  
Rack travel in m: 12.60...12.70

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 87.0...89.0  
1000 s: (84.5...91.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 64.5...65.5  
1000 s: (62.5...67.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.10  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 110.0...120.0  
1000 s: (107.0...123.0)  
Rack travel in mm : 17.00...17.40

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 6,1 r 1  
 Edition : 03.11.89  
 Replaces : 28.11.88  
 Test oil : ISO-4113  
 Combination no. : 0 400 866 126  
 Injection pump  
 Pump designation : PES6A85D410/3RS2761  
 EP type number : 0 410 886 895  
 Governor  
 Governor design. : RSV325...1150A8C673-  
 2L  
 Govenner no. : 0 420 232 519

Customer-spec. information  
 Customer : KHD

Engine : BF6L913

1st version kW : 112.0  
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60  
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 12.10...12.20

Del.quantity cm<sup>3</sup>/ : 8.4...8.5  
 100 s: (8.2...8.7)

Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

2nd speed rpm : 325.0  
 Rack travel in mm : 7.5...7.7  
 Del.quantity cm<sup>3</sup>/ : 0.9...1.5  
 100 s: (0.7...1.7)  
 Spread cm<sup>3</sup> : 0.2  
 100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1150  
 Del.quantity : 84.5...85.5  
 1000 : (82.5...87.5)  
 Spread cm<sup>3</sup> : 3.00  
 1000 : (5.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 48...56

Testing:  
 1st rack travel in: 11.10  
 Speed rpm : 1190...1200  
 2nd rack travel in: 4.00  
 Speed rpm : 1225...1255  
 3rd rack travel in: 4.00

Speed rpm : 1245...1275  
4th rack travel in: 1410  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 13...21  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 7.1

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 325  
Rack travel in mm : 7.50...7.70  
Rack travel in mm : 2.00  
Speed rpm : 420...480

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 12.10...12.20  
2nd speed rpm : 750  
Rack travel in m: 12.60...12.70  
3rd speed rpm : 855  
Rack travel in m: 12.30...12.50

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 87.0...89.0  
1000 s: (84.5...91.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than  
full load rack tr: 11.10  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 110.0...120.0  
1000 s: (107.0...123.0)  
Rack travel in mm : 17.00...17.40

#### Remarks:

: OHRENSTEIN & KOPPEL

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 6,1 r 2  
 Edition : 03.11.89  
 Replaces : 21.4.89  
 Test oil : ISO-4113  
 Combination no. : 0 400 866 127  
 Injection pump  
 Pump designation : PES6A85D410/3RS2761  
 EP type number : 0 410 886 895  
 Governor  
 Governor design. : RSV325...1150A8C707-5L  
 Governor no. : 0 420 232 517

Customer-spec. information  
 Customer : KHD

Engine : BF6L913

1st version kW : 112.0  
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60  
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 12.10...12.20

Del.quantity cm<sup>3</sup>/ : 8.4...8.5

100 s: (8.2...8.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

2nd speed rpm : 325.0

Rack travel in mm : 7.5...7.7

Del.quantity cm<sup>3</sup>/ : 0.9...1.5

100 s: (0.7...1.7)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 700

Del.quantity : 84.5...85.5

1000 : (82.5...87.5)

Spread cm<sup>3</sup> : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 48...56

Testing:

1st rack travel in: 11.10

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1225...1255

3rd rack travel in: 4.00  
Speed rpm : 1245...1275  
4th rack travel in: 1410  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 13...21  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 7.1

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 325  
Rack travel in mm : 7.50...7.70  
Rack travel in mm : 2.00  
Speed rpm : 420...480

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 12.10...12.20  
2nd speed rpm : 750  
Rack travel in m: 12.60...12.70  
3rd speed rpm : 855  
Rack travel in m: 12.30...12.50

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 11.50...11.60

#### Measurement

Speed 1/min : 500  
1st pressure hPa : 350  
Rack travel in m: 11.90...12.00  
3rd pressure hPa : 700  
Rack travel in m: 12.60...12.70

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 750  
Del.quantity cm3/ : 87.0...89.0  
1000 s: (84.5...91.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 64.5...65.5  
1000 s: (62.5...67.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.10  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 110.0...120.0  
1000 s: (107.0...123.0)  
Rack travel in mm : 17.00...17.40

Remarks:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 l  
 Edition : 06.03.90  
 Replaces : 7.4.89  
 Test oil : ISO-4113

Combination no. : 0 400 866 128

Injection pump  
 Pump designation : PES6A100D320/3RS2763  
 EP type number : 0 410 806 006  
 Governor  
 Governor design. : RSV410...950A0C2190-26R  
 Governor no. : 0 420 233 224

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 CT

1st version kW : 138.0  
 Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

B21

Prestroke mm : 2.80...2.90  
 : (2.75...3.00)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 950

---

Rack travel in mm : 9.60...9.70

---

Del.quantity cm<sup>3</sup>/ : 8.4...8.6  
 100 s: (8.2...8.8)

---

Spread cm<sup>3</sup> : 0.3  
 100 s: (0.6)

2nd speed rpm : 410.0  
 Rack travel in mm : 5.0...5.2  
 Del.quantity cm<sup>3</sup>/ : 1.6...2.0  
 100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 950  
 Del.quantity : 84.5...86.5  
 1000 : (82.5...88.5)

Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 40...48

Testing:

1st rack travel in: 8.60  
Speed rpm : 1010...1020  
2nd rack travel in: 4.00  
Speed rpm : 1050...1080  
3rd rack travel in: 4.00  
Speed rpm : 1055...1085  
4th rack travel in: 1150  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control Lever  
position degrees: 24...32  
Setting point w/out bumper spring  
Speed rpm : 410  
Rack travel in mm : 4.6

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 410  
Rack travel in mm : 5.00...5.20

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 950  
Rack travel in m: 9.60...9.70  
2nd speed rpm : 650  
Rack travel in m: 10.70...10.90

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 99.0...103.0  
1000 s: (97.0...105.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 8.60  
Speed rpm : 1010...1020

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (145.0...175.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 410  
Rack travel in mm : 5.00...5.20  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)

Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

: C.D.C. # 3915983

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark at 10° cam  
rotation angle after start of delivery,  
cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 L 9  
 Edition : 06.03.90  
 Replaces : 28.9.89  
 Test oil : ISO-4113  
  
 Combination no. : 0 400 866 129  
  
 Injection pump  
 Pump designation : PES6A100D320/3RS2763  
 EP type number : 0 410 806 006  
 Governor  
 Governor design. : RSV400...110DA0C2190  
 -27R  
 Governor no. : 0 420 233 225  
  
 Customer-spec. information  
 Customer : C.D.C.  
  
 Engine : 6CT 8.3  
  
 1st version kW : 111.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
  
 Overflow valve  
 : 1 417 413 047  
  
 Inlet press., bar : 1.50  
  
 Test nozzle holder  
 assembly : 1 688 901 017  
  
 Opening  
 pressure, bar : 207...210  
  
 Orifice plate  
 diameter mm : 0.6  
  
 Test lines : 1 680 750 014  
  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100  


---

 Rack travel in mm : 9.70...9.80  


---

 Del.quantity cm<sup>3</sup>/ : 8.5...8.7  
 100 s: (8.3...8.9)  


---

 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.6)  


---

 2nd speed rpm : 400.0  
 Rack travel in mm : 5.3...5.5  
 Del.quantity cm<sup>3</sup>/ : 1.1...1.5  
 100 s: (0.9...1.8)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Del.quantity : 85.0...87.0  
 1000 : (83.0...89.0)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (6.50)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 50...58

Testing:

1st rack travel in: 8.70  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1205...1235  
3rd rack travel in: 4.00  
Speed rpm : 1210...1240  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control Lever  
position degrees: 30...38  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 4.9

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.30...5.50

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 9.70...9.80  
2nd speed rpm : 750  
Rack travel in m: 10.80...11.00

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 94.0...98.0  
1000 s: (92.0...100.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 8.70  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (145.0...175.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.30...5.50  
Del. quantity cm<sup>3</sup>/ : 11.5...15.5  
1000 s: (9.0...18.0)

Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: C.D.C. # 3915973

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a73  
 Edition : 01.02.90  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 400 866 132LB

Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1100AOC2190  
 -33R

Governer no. : 0 420 233 237

Cust. part no. : 3917456

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 CTA 8.3ltr

1st version kw : 174.5  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 12.6...12.8

100 s: (12.4...13.0)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 400.0  
 Rack travel in mm : 5.5...5.7  
 Del.quantity cm3/ : 1.6...2.0  
 100 s: (1.3...2.2)

Spread cm3 : 0.6  
 100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Del.quantity : 126.5...128.5  
 1000 : (124.5...130.5)  
 Spread cm3 : 4.00  
 1000 : (6.50)

RATED SPEED

1st version  
 Control lever  
 position degrees: 41...49

Testing:  
1st rack travel in: 11.70  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1200...1230  
3rd rack travel in: 4.00  
Speed rpm : 1205...1235  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.1

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.00...5.20

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.70  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 155.0...175.0  
1000 s: (150.0...180.0)  
Rack travel in mm : 16.20...16.40

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.50...5.70  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

Remarks:

:

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 1 o 2  
 Edition : 24.11.89  
 Replaces : 21.4.89  
 Test oil : ISO-4113

Combination no. : 0 400 866 136

Injection pump  
 Pump designation : PES6A85D410/3RS2761  
 EP type number : 0 410 886 895  
 Governor  
 Governor design. : RSV325...1400A2C661-  
 1L  
 Governor no. : 0 420 232 516

Customer-spec. information  
 Customer : KHD

Engine : BF6L913

1st version kw : 112.0  
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60  
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 11.90...12.00

Del.quantity cm<sup>3</sup>/ : 8.2...8.3  
 100 s: (8.0...8.5)

Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

2nd speed rpm : 325.0  
 Rack travel in mm : 7.4...7.6  
 Del.quantity cm<sup>3</sup>/ : 0.8...1.4  
 100 s: (0.6...1.6)

Spread cm<sup>3</sup> : 0.2  
 100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1200  
 Del.quantity : 82.5...83.5  
 1000 : (80.5...85.5)

Spread cm<sup>3</sup> : 3.00  
 1000 : (5.00)

RATED SPEED

1st version  
 Control Lever  
 position degrees: 43...51

Testing:

1st rack travel in: 10.90  
 Speed rpm : 1240...1250  
 2nd rack travel in: 4.00  
 Speed rpm : 1285...1315  
 3rd rack travel in: 4.00

Speed rpm : 1305...1335  
4th rack travel in: 1470  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 15...23  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 7.0

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 325  
Rack travel in mm : 7.40...7.60  
Rack travel in mm : 2.00  
Speed rpm : 440...500

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 11.90...12.00  
2nd speed rpm : 750  
Rack travel in m: 12.70...12.80  
3rd speed rpm : 1020  
Rack travel in m: 12.30...12.50

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 85.0...87.0  
1000 s: (82.5...89.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.90  
Speed rpm : 1240...1250

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 110.0...120.0  
1000 s: (107.0...123.0)  
Rack travel in mm : 17.00...17.40

Remarks:

: ORENSTEIN & KOPPEL

#### APPLICATION

Excavator



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 6,1 r 3  
 Edition : 03.11.89  
 Replaces : 16.6.89  
 Test oil : ISO-4113

Combination no. : 0 400 866 137

Injection pump  
 Pump designation : PES6A85D410/3RS2761  
 EP type number : 0 410 886 895  
 Governor  
 Governor design. : RSV325...1400A2C2205  
 -1L  
 Governor no. : 0 420 232 520

Customer-spec. information  
 Customer : KHD

Engine : BF6L913

1st version kw : 118.0  
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60  
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 12.30...12.40

Del.quantity cm<sup>3</sup>/ : 8.7...8.8  
 100 s: (8.5...9.0)

Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

2nd speed rpm : 325.0  
 Rack travel in mm : 7.3...7.5  
 Del.quantity cm<sup>3</sup>/ : 0.8...1.4  
 100 s: (0.6...1.6)  
 Spread cm<sup>3</sup> : 0.2  
 100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1250  
 Aneroid pressure h: 700  
 Del.quantity : 87.5...88.5  
 1000 : (85.5...90.5)  
 Spread cm<sup>3</sup> : 3.00  
 1000 : (5.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 43...51

Testing:  
 1st rack travel in: 11.30  
 Speed rpm : 1290...1300  
 2nd rack travel in: 4.00  
 Speed rpm : 1345...1375

3rd rack travel in: 4.00  
Speed rpm : 1360...1390  
4th rack travel in: 1525  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 13...21  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 6.9

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 325  
Rack travel in mm : 7.30...7.50  
Rack travel in mm : 2.00  
Speed rpm : 435...495

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 12.30...12.40  
2nd speed rpm : 750  
Rack travel in m: 12.80...12.90  
3rd speed rpm : 940  
Rack travel in m: 12.50...12.70

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 11.40...11.50

#### Measurement

Speed 1/min : 500  
1st pressure hPa : 300  
Rack travel in m: 11.60...11.70  
3rd pressure hPa : 700  
Rack travel in m: 12.80...12.90

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 88.5...90.5  
1000 s: (86.0...93.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 62.5...63.5  
1000 s: (60.5...65.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.30  
Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 110.0...120.0  
1000 s: (107.0...123.0)  
Rack travel in mm : 17.00...17.40

Remarks:

#### APPLICATION

Wheel loader

Excavator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 5,9 v 2  
 Edition : 01.02.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 866 143  
 Injection pump  
 Pump designation : PES6A95D12ORS2773  
 EP type number : 0 410 896 904  
 Governor  
 Governor design. : RSV350...1250A0C2237  
 R  
 Governor no. : 0 420 233 240

Customer-spec. information  
 Customer : CUMMINS

Engine : 6BT  
 1st version kw : 118.0  
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 017  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,6  
 Test lines : 1 680 750 014  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.10...2.20  
 : (2.05...2.25)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250  
 Rack travel in mm : 9.40...9.50  
 Del.quantity cm<sup>3</sup>/ : 8.6...8.8  
 100 s: (8.3...9.0)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.6)

2nd speed rpm : 350.0  
 Rack travel in mm : 6.1...6.3  
 Del.quantity cm<sup>3</sup>/ : 1.0...1.6  
 100 s: (0.7...1.8)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1250  
 Del.quantity : 86.0...88.0  
 1000 : (83.5...90.5)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 91...99

Testing:  
 1st rack travel in: 8.40  
 Speed rpm : 1290...1300

2nd rack travel in: 4.00  
Speed rpm : 1355...1385  
3rd rack travel in: 4.00  
Speed rpm : 1370...1400  
4th rack travel in: 1530  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 70...78  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.0

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 350  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 465...525

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1250  
Rack travel in m: 9.40...9.50  
2nd speed rpm : 500  
Rack travel in m: 9.40...9.60

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 500  
Del.quantity cm3/ : 69.5...72.5  
1000 s: (67.5...74.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 8.40  
Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 107.0...117.0  
1000 s: (104.0...120.0)  
Rack travel in mm : 14.10...14.50

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.10...6.30  
Del.quantity cm3/ : 10.0...16.0  
1000 s: (7.5...18.5)

Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

Start-of-delivery mark 11.5° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 a68  
 Edition : 01.02.90  
 Replaces : 7.4.89  
 Test oil : ISO-4113

Combination no. : 0 400 866 145

Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1100AOC2190  
 -35R  
 Governor no. : 0 420 233 242

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 C 8.3 ltr.

1st version kW : 112.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test Lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.30...11.40

Del.quantity cm<sup>3</sup>/ : 10.5...10.7

100 s: (10.3...10.9)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.8...6.0

Del.quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.6

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 105.5...107.5

1000 : (103.5...109.5)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing:

1st rack travel in: 10.30  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1195...1225  
3rd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control Lever  
position degrees: 23...31  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.4

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.80...6.00

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.30  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

Remarks:  
: C.D.C. # 3915955

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

Adjust stop lever to 0.5...1.0 mm  
before stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 L10  
 Edition : 06.03.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 866 148  
 Injection pump  
 Pump designation : PES6A100D320/3RS2763  
 EP type number : 0 410 806 006  
 Governor  
 Governor design. : RSV415..1175A0C2190-43R  
 Governor no. : 0 420 233 249

Customer-spec. information

Customer : C.D.C

Engine : 6 CT

1st version kw : 129.0  
 Rated speed : 2350

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 10.40...10.50

Del.quantity cm<sup>3</sup>/ : 9.6...9.8

100 s: (9.4...10.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

2nd speed rpm : 415.0

Rack travel in mm : 5.1...5.3

Del.quantity cm<sup>3</sup>/ : 1.5...1.9

100 s: (1.3...2.1)

Spread cm<sup>3</sup> : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1175

Del.quantity : 96.0...98.0

1000 : (94.0...100.0)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 56...64

Testing:

1st rack travel in: 9.40  
Speed rpm : 1210...1220  
2nd rack travel in: 4.00  
Speed rpm : 1270...1300  
3rd rack travel in: 4.00  
Speed rpm : 1275...1305  
4th rack travel in: 1350  
Speed rpm : 0.30...0.70

#### LOW IDLE 1

Control lever  
position degrees: 32...40  
Setting point w/out bumper spring  
Speed rpm : 415  
Rack travel in mm : 4.7

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 415  
Rack travel in mm : 5.10...5.30

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1175  
Rack travel in m: 10.40...10.50  
2nd speed rpm : 800  
Rack travel in m: 10.70...10.90

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 98.0...102.0  
1000 s: (96.0...104.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.40  
Speed rpm : 1210...1220

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 145.0...165.0  
1000 s: (140.0...170.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 415  
Rack travel in mm : 5.10...5.30  
Del.quantity cm<sup>3</sup>/ : 15.0...19.0  
1000 s: (13.0...21.0)

Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: C.D.C. # 3919459

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 L12  
 Edition : 02.05.90  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 400 866 149

Injection pump  
 Pump designation : PES6A100D320/3RS2763  
 EP type number : 0 410 806 006  
 Governor  
 Governor design. : RSV400...1000A0C2190  
 -44R  
 Governor no. : 0 420 233 250

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 CTA

1st version kW : 166.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.90...13.00

Del.quantity cm<sup>3</sup>/ : 13.2...13.4

100 s: (13.0...13.6)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

2nd speed rpm : 375.0

Rack travel in mm : 5.0...5.2

Del.quantity cm<sup>3</sup>/ : 1.4...1.8

100 s: (1.2...2.0)

Spread cm<sup>3</sup> : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 132.5...134.5

1000 : (130.5...136.5)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 34...42

Testing:

1st rack travel in: 11.90  
Speed rpm : 1050...1060  
2nd rack travel in: 4.00  
Speed rpm : 1110...1140  
3rd rack travel in: 4.00  
Speed rpm : 1110...1140  
4th rack travel in: 1200  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 15...23  
Setting point w/out bumper spring  
Speed rpm : 375  
Rack travel in mm : 4.6

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 375  
Rack travel in mm : 5.00...5.20

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 12.90...13.00  
2nd speed rpm : 750  
Rack travel in m: 13.40...13.60

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 141.5...145.5  
1000 s: (139.5...147.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.90  
Speed rpm : 1050...1060

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 145.0...165.0  
1000 s: (140.0...170.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 375  
Rack travel in mm : 5.00...5.20  
Del.quantity cm<sup>3</sup>/ : 14.0...18.0  
1000 s: (12.0...20.0)

Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: C.D.C. # 3915570

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark at 10° cam  
rotation angle after start of delivery,  
cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 L 8  
 Edition : 02.05.90  
 Replaces : 28.9.89  
 Test oil : ISO-4113

Combination no. : 0 400 866 150

Injection pump  
 Pump designation : PES6A100D320/3RS2763  
 EP type number : 0 410 806 006  
 Governor  
 Governor design. : RSV400...1100ADC2190  
 -45R  
 Governor no. : 0 420 233 253

Customer spec. information  
 Customer : C.D.C.

Engine : 6CT 8.3

1st version kW : 134.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.90...11.00

Del. quantity cm<sup>3</sup>/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

2nd speed rpm : 375.0

Rack travel in mm : 5.9...6.1

Del. quantity cm<sup>3</sup>/ : 2.3...2.7

100 s: (2.1...2.9)

Spread cm<sup>3</sup> : 0.6

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 101.5...103.5

1000 : (99.5...105.5)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control lever

position degrees: 51...59

Testing:

1st rack travel in: 9.90  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1230...1240  
3rd rack travel in: 4.00  
Speed rpm : 1230...1260  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 31...39  
Setting point w/out bumper spring  
Speed rpm : 375  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 375  
Rack travel in mm : 5.90...6.10

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 10.90...11.00  
2nd speed rpm : 750  
Rack travel in m: 11.90...12.10

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 114.5...118.5  
1000 s: (112.5...120.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.90  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (145.0...175.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 375  
Rack travel in mm : 5.90...6.10  
Del. quantity cm<sup>3</sup>/ : 23.0...27.0  
1000 s: (21.0...29.0)

Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: C.D.C. # 3915974

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 o  
 Edition : 01.02.90  
 Replaces : 28.9.89  
 Test oil : ISO-4113

Combination no. : 0 400 866 151

Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 -4

EP type number : 9 410 230 030

Governor  
 Governor design. : RSV450...1100A0C2238  
 -R

Governer no. : 0 420 233 254

Customer-spec. information

Customer : C.D.C.

Engine : 6CT830

1st version kW : 151.0

Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Phasing :  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.10...12.20

Del.quantity cm<sup>3</sup>/ : 11.8...12.0

100 s: (11.6...12.2)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

2nd speed rpm : 450.0

Rack travel in mm : 5.7...5.9

Del.quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del.quantity : 118.5...120.5

1000 : (116.5...122.5)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing:

1st rack travel in: 11.10  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 22...30  
Setting point w/out bumper spring  
Speed rpm : 450  
Rack travel in mm : 5.3

Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 450  
Rack travel in mm : 5.70...5.90

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.10...12.20  
2nd speed rpm : 750  
Rack travel in m: 13.10...13.30

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.10...13.30

Measurement

Speed 1/min : 500  
1st pressure hPa : -  
Rack travel in m: 10.40...10.60  
2nd pressure hPa : 385  
Rack travel in m: 11.40...11.50  
3rd pressure hPa : 560  
Rack travel in m: 12.60...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900  
Speed rpm : 750  
Del.quantity cm3/ : 133.0...137.0  
1000 s: (131.0...139.0)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm3/ : 78.0...80.0  
1000 s: (76.0...82.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.10  
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 450  
Rack travel in mm : 5.70...5.90  
Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm3 : 6.00  
1000 s: (8.00)

Remarks:

: C.D.C. # 3915996  
Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

Adjust stop lever to 0.5...1.0 mm  
before stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 6,1 u  
 Edition : 01.02.90  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 400 866 152

Injection pump  
 Pump designation : PES6A85D410/3RS2783  
 EP type number : 0 410 886 893  
 Governor  
 Governor design. : RSV325...1250A5C2239  
 L  
 Governor no. : 0 420 232 526

Customer-spec. information  
 Customer : KHD

Engine : F6L912F

1st version kW : 82.0  
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05  
 : (2.90...3.10)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.80...11.90

Del.quantity cm<sup>3</sup>/ : 6.9...7.0  
 100 s: (6.7...7.2)

Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

2nd speed rpm : 325.0  
 Rack travel in mm : 7.4...7.6  
 Del.quantity cm<sup>3</sup>/ : 0.8...1.4  
 100 s: (0.6...1.6)

Spread cm<sup>3</sup> : 0.2  
 100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1250  
 Del.quantity : 69.5...70.5  
 1000 : (67.5...72.5)

Spread cm<sup>3</sup> : 3.00  
 1000 : (5.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 100...108

Testing:  
 1st rack travel in: 10.80  
 Speed rpm : 1290...1300  
 2nd rack travel in: 4.00  
 Speed rpm : 1330...1360  
 3rd rack travel in: 4.00

Speed rpm : 1345...1375  
4th rack travel in: 1510  
Speed rpm : 0.30...1.40

Spread cm3 : 2.50  
1000 s: (4.50)

Remarks:

LOW IDLE 1

Control lever  
position degrees: 65...73  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 5.5

Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 325  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 400...460

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 11.80...11.90  
2nd speed rpm : 750  
Rack travel in m: 11.80...12.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750  
Del.quantity cm3/ : 54.5...56.5  
1000 s: (52.0...59.0)  
Speed rpm : 1000  
Del.quantity cm3/ : 63.0...65.0  
1000 s: (60.5...67.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.80  
Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 105.0...115.0  
1000 s: (102.0...118.0)  
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 325  
Rack travel in mm : 7.40...7.60  
Del.quantity cm3/ : 8.0...14.0  
1000 s: (6.0...16.0)



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 p  
 Edition : 01.02.90  
 Replaces : 28.9.89  
 Test oil : ISO-4113

Combination no. : 0 400 866 153

Injection pump  
 Pump designation : PES6A100D320/3RS2763  
 EP type number : 0 410 806 006  
 Governor  
 Governor design. : RSV400...950A0C2238-1R  
 Governor no. : 0 420 233 255

Customer-spec. information  
 Customer : C.D.C.

Engine : 6CT 8.3

1st version kW : 145.0  
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 950

---

Rack travel in mm : 12.40...12.50

---

Del.quantity cm<sup>3</sup>/ : 12.2...12.4  
 100 s : (12.0...12.6)

---

Spread cm<sup>3</sup> : 0.4  
 100 s : (0.6)

---

2nd speed rpm : 400.0  
 Rack travel in mm : 6.9...7.1  
 Del.quantity cm<sup>3</sup>/ : 3.2...3.6  
 100 s : (3.0...3.8)

Spread cm<sup>3</sup> : 0.6  
 100 s : (0.8)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 950  
 Aneroid pressure h: 900  
 Del.quantity : 122.0...124.0  
 1000 : (120.0...126.0)

Spread cm<sup>3</sup> : 4.00  
 1000 : (6.50)

RATED SPEED

1st version  
 Control lever  
 position degrees: 36...44

Testing:

1st rack travel in: 11.40  
Speed rpm : 990...1000  
3rd rack travel in: 4.00  
Speed rpm : 1055...1085  
4th rack travel in: 1150  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 22...30  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 6.5

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 6.90...7.10

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.40...12.50

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.60...10.80  
2nd pressure hPa : 220  
Rack travel in m: 11.10...11.20  
3rd pressure hPa : 340  
Rack travel in m: 11.90...12.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 86.0...90.0  
1000 s: (84.0...92.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 11.40  
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 150.0...170.0  
1000 s: (145.0...175.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 6.90...7.10  
Del.quantity cm3/ : 32.5...36.5  
1000 s: (30.5...38.5)  
Spread cm3 : 6.00  
1000 s: (8.00)

Remarks:

: C.D.C. # 3917577

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark at 10° cam  
rotation angle after start of delivery,  
cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 L11  
 Edition : 01.02.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 866 155  
 Injection pump  
 Pump designation : PES6A100D320/3RS2763  
 EP type number : 0 410 806 006  
 Governor  
 Governor design. : RSV400...1000A0C2190  
 -46R  
 Governor no. : 0 420 233 257

Customer-spec. information  
 Customer : C.D.C.

Engine : 6CT 8.3

1st version kW : 136.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000  
 Rack travel in mm : 11.20...11.30  
 Del. quantity cm<sup>3</sup>/ : 10.7...10.9  
 100 s: (10.5...11.1)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.6)

2nd speed rpm : 400.0  
 Rack travel in mm : 5.3...5.5  
 Del. quantity cm<sup>3</sup>/ : 1.1...1.5  
 100 s: (0.9...1.8)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Del. quantity : 107.0...109.0  
 1000 : (105.0...111.0)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (6.50)

RATED SPEED

1st version  
 Control lever  
 position degrees: 39...47

Testing:

1st rack travel in: 11.20  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1095...1125  
3rd rack travel in: 4.00  
Speed rpm : 1100...1130  
4th rack travel in: 12.00  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 22...30  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 4.9

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.30...5.50

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 11.20...11.30  
2nd speed rpm : 750  
Rack travel in m: 12.00...12.20

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 118.0...122.0  
1000 s: (116.0...124.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.20  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (145.0...175.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.30...5.50  
Del.quantity cm<sup>3</sup>/ : 11.5...15.5  
1000 s: (9.0...18.0)

Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: C.D.C. # 3916719

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VMA 6,0 a  
 Edition : 02.01.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 866 156  
 Injection pump  
 Pump designation : PES6A90D320/3RS2785  
 EP type number : 0 410 896 088  
 Governor  
 Governor design. : RSV350...1300A2C2242  
 R  
 Governor no. : 0 420 233 259

Customer-spec. information  
 Customer : VM

Engine : SUN 6105 ,...T

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test lines : 1 680 750 014  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 2.95...3.05  
 : (2.90...3.10)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200  
 Rack travel in mm : 12.00...12.10  
 Del. quantity cm<sup>3</sup>/ : 9.4...9.5  
 100 s : (9.2...9.7)  
 Spread cm<sup>3</sup> : 0.3  
 100 s : (0.5)

2nd speed rpm : 350.0  
 Rack travel in mm : 7.4...7.6  
 Del. quantity cm<sup>3</sup>/ : 1.2...1.8  
 100 s : (1.0...2.0)  
 Spread cm<sup>3</sup> : 0.2  
 100 s : (0.4)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1200  
 Del. quantity : 94.5...95.5  
 1000 : (92.5...97.5)  
 Spread cm<sup>3</sup> : 3.00  
 1000 : (5.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 95...103

Testing:  
 1st rack travel in: 11.00  
 Speed rpm : 1340...1350  
 2nd rack travel in: 4.00  
 Speed rpm : 1385...1415  
 3rd rack travel in: 4.00  
 Speed rpm : 1415...1445

4th rack travel in: 1580  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever  
position degrees: 64...72  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 7.0

Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 350  
Rack travel in mm : 7.40...7.60  
Rack travel in mm : 2.00  
Speed rpm : 530...590

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 12.00...12.10  
2nd speed rpm : 550  
Rack travel in m: 12.00...12.10  
5th speed rpm : 400  
Rack travel in m: 13.20...13.80

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 105.0...115.0  
1000 s: (102.0...118.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 a74  
 Edition : 02.05.90  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 400 866 158

Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1100AOC2190  
 -47R  
 Governor no. : 0 420 233 261

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 C 8.3

1st version kw : 126.8  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.70...10.80

Del.quantity cm<sup>3</sup>/ : 9.6...9.8

100 s: (9.4...10.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.8...6.0

Del.quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 96.5...98.5

1000 : (94.5...100.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 48...56

Testing:

1st rack travel in: 9.70  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 27...35  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.4

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.80...6.00

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 10.70...10.80  
2nd speed rpm : 750  
Rack travel in m: 12.30...12.50

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 119.5...123.5  
1000 s: (117.5...125.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.70  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Del. quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

: C.D.C. # 3918664

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 1 g 45  
 Edition : 05.03.90  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 400 866 159

Injection pump  
 Pump designation : PES6A85D410/3RS2761  
 EP type number : 0 410 886 895  
 Governor  
 Governor design. : RSV325...1400A2C2245

Governer no. : 0 420 232 537

Customer-spec. information  
 Customer : KHD

Engine : BF6L913T

1st version kW : 85.0  
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60  
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 9.70...9.80

Del.quantity cm<sup>3</sup>/ : 6.2...6.3

100 s : (6.0...6.5)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

2nd speed rpm : 325.0

Rack travel in mm : 8.0...8.2

Del.quantity cm<sup>3</sup>/ : 1.3...1.9

100 s : (1.1...2.1)

Spread cm<sup>3</sup> : 0.2

100 s : (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del.quantity : 62.5...63.5

1000 : (60.5...65.5)

Spread cm<sup>3</sup> : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 95...103

Testing:

1st rack travel in: 8.70

Speed rpm : 1240...1250

2nd rack travel in: 4.00

Speed rpm : 1265...1295

3rd rack travel in: 4.00

Speed rpm : 1285...1315  
4th rack travel in: 1445  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 64...72  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 6.2

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 325  
Rack travel in mm : 6.60...6.80  
Rack travel in mm : 2.00  
Speed rpm : 420...480

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 9.70...9.80  
2nd speed rpm : 500  
Rack travel in m: 10.40...10.50  
4th speed rpm : 985  
Rack travel in m: 10.00...10.20

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 57.0...59.0  
1000 s: (54.5...61.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 8.70  
Speed rpm : 1240...1250

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 120.0...130.0  
1000 s: (117.0...133.0)  
Rack travel in mm : 17.80...18.20

Remarks:

: TM 2

#### APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 a77  
 Edition : 06.03.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 866 160  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV470...1100A0C2190  
 -48R  
 Governor no. : 0 420 233 262

Customer-spec. information  
 Customer : C.D.C.

Engine : 6CT830

1st version kW : 150.6  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100  


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 Rack travel in mm : 12.10...12.20  


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 Del.quantity cm<sup>3</sup>/ : 11.4...11.6  
 100 s: (11.2...11.8)  


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 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.6)

2nd speed rpm : 470.0  
 Rack travel in mm : 5.7...5.9  
 Del.quantity cm<sup>3</sup>/ : 1.6...2.0  
 100 s: (1.3...2.2)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Del.quantity : 114.0...116.0  
 1000 : (112.0...118.0)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (6.50)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 48...56

Testing:

1st rack travel in: 11.10  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1205...1235  
3rd rack travel in: 4.00  
Speed rpm : 1210...1240  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control Lever  
position degrees: 29...37  
Setting point w/out bumper spring  
Speed rpm : 470  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 470  
Rack travel in mm : 5.70...5.90

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.10...12.20  
2nd speed rpm : 750  
Rack travel in m: 12.40...12.60

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 116.0...120.0  
1000 s: (114.0...122.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.10  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 125.0...145.0  
1000 s: (120.0...150.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 470  
Rack travel in mm : 5.70...5.90  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)

Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: C.D.C. # 3917962

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Adjust stop lever to 0.5...1.0 mm  
before stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a78  
 Edition : 02.05.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 866 161  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1000AOC2190  
 -49R  
 Governor no. : 0 420 233 263

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 CT 8.3

1st version kW : 151.4  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

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Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.10...12.20

Del.quantity cm<sup>3</sup>/ : 11.9...12.1

100 s: (11.7...12.3)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.6...5.8

Del.quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 119.0...121.0

1000 : (117.0...123.0)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 34...42

Testing:

1st rack travel in: 11.10  
Speed rpm : 1050...1060  
2nd rack travel in: 4.00  
Speed rpm : 1100...1130  
3rd rack travel in: 4.00  
Speed rpm : 1105...1135  
4th rack travel in: 1175  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.2

Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.60...5.80

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.10  
Speed rpm : 1050...1060

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.60...5.80  
Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm3 : 6.00  
1000 s: (8.00)

Remarks:  
: C.D.C. # 3915963

Adjust stop lever to 0.5...1.0 mm  
before stop.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 3,0 g  
Edition : 19.03.90  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 400 873 038  
Injection pump  
Pump designation : PES3A80D410RS2790  
EP type number : 0 410 883 011  
Governor  
Governor design. : RSV325...900A7C602-1  
L  
Governor no. : 0 420 232 388

Customer-spec. information  
Customer : KHD

Engine : F3L912/W

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 417 413 000  
Inlet press., bar : 1.50  
Test nozzle holder  
assembly : 0 681 343 009  
Opening  
pressure, bar : 172...175  
Test lines : 1 680 750 014  
Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
Prestroke mm : 1.90...2.00  
                  : (1.85...2.05)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 2

Phasing : 0-120-240  
Tolerance + - ° : 0.50 (0.75)  
Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900  
Rack travel in mm : 10.50...10.60  
Del. quantity cm<sup>3</sup>/ : 5.1...5.2  
100 s : (5.0...5.4)  
Spread cm<sup>3</sup> : 0.2  
100 s : (0.4)  
2nd speed rpm : 325.0  
Rack travel in mm : 7.6...7.8  
Del. quantity cm<sup>3</sup>/ : 0.7...1.3  
100 s : (0.5...1.4)  
Spread cm<sup>3</sup> : 0.2  
100 s : (0.3)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 900  
Del. quantity : 51.5...52.5  
1000 : (50.0...54.0)  
Spread cm<sup>3</sup> : 2.50  
1000 : (4.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 98...106

Testing:  
1st rack travel in: 9.50  
Speed rpm : 940...950  
2nd rack travel in: 4.00  
Speed rpm : 955...985

## LOW IDLE 1

Control lever  
position degrees: 66...74  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 6.0

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 325  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 315...375

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 10.50...10.60  
2nd speed rpm : 500  
Rack travel in m: 10.50...10.70

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 500  
Del.quantity cm3/ : 45.5...47.5  
1000 s: (43.5...49.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.50  
Speed rpm : 940...950

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 120.0...130.0  
1000 s: (117.0...133.0)  
Rack travel in mm : 19.50...21.00

Remarks:  
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BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : STE 3,4 a 1  
 Edition : 27.10.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 400 874 247

Injection pump  
 Pump designation : PES4A85D410RS2746  
 EP type number : 0 410 884 946  
 Governor  
 Governor design. : RSV300...1100A1C2227  
 L  
 Governor no. : 0 420 232 491

Customer-spec. information  
 Customer : STEYR

Engine : WD408.45

1st version kw : 46.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.85...2.95  
 : (2.80...3.00)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200

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Rack travel in mm : 8.60...8.70

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Del.quantity cm<sup>3</sup>/ : 5.0...5.1  
 100 s : (4.8...5.3)

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Spread cm<sup>3</sup> : 0.3  
 100 s : (0.5)

2nd speed rpm : 300.0  
 Rack travel in mm : 6.1...6.3  
 Del.quantity cm<sup>3</sup>/ : 1.0...1.6  
 100 s : (0.8...1.7)  
 Spread cm<sup>3</sup> : 0.2  
 100 s : (0.4)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1200  
 Del.quantity : 50.5...51.5  
 1000 : (48.5...53.5)  
 Spread cm<sup>3</sup> : 3.00  
 1000 : (5.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 105...113

Testing:  
 1st rack travel in: 7.60  
 Speed rpm : 1140...1150  
 2nd rack travel in: 4.00

Speed rpm : 1145...1175  
3rd rack travel in: 4.00  
Speed rpm : 1155...1185  
4th rack travel in: 1420  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control Lever  
position degrees: 67...75  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.2

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 300  
Rack travel in mm : 5.60...5.80  
Rack travel in mm : 2.00  
Speed rpm : 430...490

#### TORQUE CONTROL

Dimension a mm : 0.85  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 8.60...8.70  
2nd speed rpm : 500  
Rack travel in m: 9.40...9.50  
4th speed rpm : 915  
Rack travel in m: 9.00...9.10

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm3/ : 47.0...49.0  
1000 s: (44.5...51.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 7.60  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 90.0...100.0  
1000 s: (87.0...103.0)  
Rack travel in mm : 19.50...21.00

Remarks:

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#### APPLICATION

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Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : STE 3,4 a 2  
 Edition : 01.02.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 874 247  
 Injection pump  
 Pump designation : PES4A85D41ORS2746  
 EP type number : 0 410 884 946  
 Governor  
 Governor design. : RSV300...1200A1C2227  
 L  
 Governor no. : 0 420 232 525

Customer-spec. information  
 Customer : STEYR

Engine : WD408.45

1st version kW : 46.0  
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.85...2.95  
 : (2.80...3.00)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 8.60...8.70

Del.quantity cm<sup>3</sup>/ : 5.0...5.1

100 s: (4.8...5.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

2nd speed rpm : 300.0

Rack travel in mm : 6.1...6.3

Del.quantity cm<sup>3</sup>/ : 1.0...1.6

100 s: (0.8...1.7)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del.quantity : 50.5...51.5

1000 : (48.5...53.5)

Spread cm<sup>3</sup> : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 105...113

Testing:

1st rack travel in: 7.60

Speed rpm : 1240...1250

2nd rack travel in: 4.00

Speed rpm : 1245...1275  
3rd rack travel in: 4.00  
Speed rpm : 1255...1285  
4th rack travel in: 1420  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 67...75  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.2

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 300  
Rack travel in mm : 5.60...5.80  
Rack travel in mm : 2.00  
Speed rpm : 430...490

#### TORQUE CONTROL

Dimension a mm : 0.85  
Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 8.60...8.70  
2nd speed rpm : 500  
Rack travel in m: 9.40...9.50  
4th speed rpm : 915  
Rack travel in m: 9.00...9.10

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500

#### Measurement

Speed 1/min : 500

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 47.0...49.0  
1000 s: (44.5...51.5)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 7.60  
Speed rpm : 1240...1250

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 90.0...100.0  
1000 s: (87.0...103.0)  
Rack travel in mm : 19.50...21.00

Remarks:

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 e 1  
 Edition : 02.01.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 874 248  
 Injection pump  
 Pump designation : PES4A90D410RS2728  
 EP type number : 0 410 894 030  
 Governor  
 Governor design. : RSV350...750AQC2240-1L  
 Governor no. : 0 420 232 535

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM364

1st version kw : 39.0  
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35  
 : (2.20...2.40)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.00...12.10

Del.quantity cm<sup>3</sup>/ : 5.7...5.9

100 s: (5.5...6.1)

Spread cm<sup>3</sup> : 0.3

100 s: (0.4)

2nd speed rpm : 350.0

Rack travel in mm : 6.9...7.1

Del.quantity cm<sup>3</sup>/ : 1.0...1.4

100 s: (0.8...1.6)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.10

Governor spring pre-tension

Click setting x : 2.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 57.0...59.0

1000 : (55.0...61.0)

Spread cm<sup>3</sup> : 3.00

1000 : (4.50)

RATED SPEED

1st version

Control lever

position degrees: 76...84

Testing:

1st rack travel in: 11.00

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 780...793

4th rack travel in: 850

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 62...70

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 7.0

Testing:

Speed rpm : 100

Minimum rack trave: 19.50

Speed rpm : 350

Rack travel in mm : 6.90...7.10

Rack travel in mm: 2.00

Speed rpm : 375...405

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 78.0...88.0

1000 s: (75.0...91.0)

Rack travel in mm : 16.50...16.90

Remarks:

:

Observe VDT-I-420/120

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 5,7 o 6  
 Edition : 15.03.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 192  
 Injection pump  
 Pump designation : PES6A90D410RS2293  
 EP type number : 0 410 896 031  
 Governor  
 Governor design. : RSV575...1250A1C618L  
 Governor no. : 0 420 232 407

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM 352

1st version kW : 88.3  
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25  
 : (2.10...2.30)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1230

Rack travel in mm : 10.50...10.60

Del. quantity cm<sup>3</sup>/ : 6.1...6.2

100 s: (5.9...6.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.4)

2nd speed rpm : 575.0

Rack travel in mm : 6.4...6.6

Del. quantity cm<sup>3</sup>/ : 1.0...1.6

100 s: (0.8...1.8)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1230

Del. quantity : 61.0...62.0

1000 : (59.0...64.0)

Spread cm<sup>3</sup> : 3.00

1000 : (4.50)

RATED SPEED

1st version

Control lever

position degrees: 58...66

Testing:

1st rack travel in: 9.50

Speed rpm : 1250...1260

2nd rack travel in: 4.00

Speed rpm : 1275...1295

4th rack travel in: 1350

Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 24...32

Setting point w/out bumper spring

Speed rpm : 575

Rack travel in mm : 6.5

Testing:

Speed rpm : 100

Minimum rack trave: 19.00

Speed rpm : 575

Rack travel in mm : 6.40...6.60

Rack travel in mm : 2.00

Speed rpm : 605...635

Speed rpm : 650

Maximum rack trave: 1.00

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 78.0...88.0

1000 s: (75.0...91.0)

Remarks:

:

APPLICATION

Combine-harvester



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 5,7 o 5  
 Edition : 15.03.90  
 Replaces : 2.6.89  
 Test oil : ISO-4113

Combination no. : 0 400 876 195

Injection pump  
 Pump designation : PES6A90D410RS2293Z  
 EP type number : 0 410 896 037  
 Governor  
 Governor design. : RSV750...1250A1C618-  
 1L  
 Governor no. : 0 420 232 513

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM352A

1st version kW : 107.0  
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25  
 : (2.10...2.30)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1230

Rack travel in mm : 11.20...11.30

Del.quantity cm<sup>3</sup>/ : 7.4...7.5

100 s: (7.2...7.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.4)

2nd speed rpm : 750.0

Rack travel in mm : 5.5...5.7

Del.quantity cm<sup>3</sup>/ : 1.0...1.6

100 s: (0.8...1.8)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1230

Del.quantity : 74.5...75.5

1000 : (72.5...77.5)

Spread cm<sup>3</sup> : 3.00

1000 : (4.50)

RATED SPEED

1st version

Control lever

position degrees: 111...119

Testing:

1st rack travel in: 10.20

Speed rpm : 1260...1270

2nd rack travel in: 4.00

Speed rpm : 1295...1315

4th rack travel in: 1350

Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 86...94

Setting point w/out bumper spring

Speed rpm : 750

Rack travel in mm : 5.6

Speed rpm : 750

Rack travel in mm : 5.50...5.70

Rack travel in mm : 2.00

Speed rpm : 760...790

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 78.0...88.0

1000 s: (75.0...91.0)

Remarks:

:

APPLICATION

Combine-harvester



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CAS 8,3 s  
Edition : 14.02.1990  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 400 876 207

Injection pump  
Pump designation : PES6A90D420LS2354  
Governor  
Governor design. : RSV375...1050A2B710D  
R

Customer-spec. information  
Customer : CASE

Engine : A-504 BDT

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 35...45

Inlet press., bar : 1.3

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.15...2.25  
: (2.10...2.30)

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.5 (0.75)

## BASIC SETTING

1st speed rpm : 1000

---

Rack travel in mm : 9.00

---

Del.quantity cm<sup>3</sup>/ : 4.8...5.1

---

100 s : (-)

---

Spread cm<sup>3</sup> : 0.5

---

100 s : (-)

2nd speed rpm : 1000  
Rack travel in mm : 12.00  
Del.quantity cm<sup>3</sup>/ : 8.6...9.4  
100 s : (-)

3rd speed rpm : 200  
Rack travel in mm : 6.00  
Del.quantity cm<sup>3</sup>/ : 0.72...1.33

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3

Speed rpm : 800  
Rack travel in mm : 0.30...1.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Del.quantity : 91.0...93.0  
1000 : (-)

## RATED SPEED

1st version  
Control lever  
position degrees: 36...44

Testing:  
1st rack travel in: 12.20  
Speed rpm : 1060...1080  
2nd rack travel in: 8.70  
Speed rpm : 1085...1115  
3rd rack travel in: 4.50...6.20  
Speed rpm : 1135...1165  
4th rack travel in: 1250  
Speed rpm : 0.30...1.00

## LOW IDLE 1

Control lever  
position degrees: 14...22  
Setting point w/out bumper spring  
Speed rpm : 375  
Rack travel in mm : 7.80

Testing:  
Speed rpm : 150  
Minimum rack trave: 19.00  
Speed rpm : 375

Rack travel in mm : 7.50...8.10  
Rack travel in mm : 4.35  
Speed rpm : 450  
Speed rpm : 580  
Maximum rack trave: 1.00

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: -  
2nd speed rpm : 500  
Rack travel in m: 0.10...0.40

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 91.0...95.0  
1000 s: (-)  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : < 94.0  
1000 s: (-)

#### BREAKAWAY

##### 1st version

1mm rack travel less than  
full load rack tr: ?  
Speed rpm : 1090...1105

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 134.0...144.0  
1000 s: (-)

#### HIGH IDLE

##### 1st version

Speed rpm : 1150  
Del.quantity cm<sup>3</sup>/ : 14.0...18.0  
1000 s: (-)

#### LOW IDLE

Speed rpm : 375  
Del.quantity cm<sup>3</sup>/ : 18.0...22.5  
1000 s: (-)

Remarks:

: CASE # A66215

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 5,7 q 7  
 Edition : 07.07.89  
 Replaces : 9.3.87  
 Test oil : ISO-4113

Combination no. : 0 400 876 257

Injection pump  
 Pump designation : PES6A90D410RS2293Z  
 EP type number : 0 410 896 037  
 Governor  
 Governor design. : RSV350...1300A0C1101  
 -2L  
 Governor no. : 0 420 232 411

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM 352

1st version kW : 69.9  
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25  
 : (2.10...2.30)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 8.20...8.30

Del. quantity cm<sup>3</sup>/ : 4.4...4.5  
 100 s: (4.2...4.7)

Spread cm<sup>3</sup> : 0.3  
 100 s: (0.4)

2nd speed rpm : 350.0  
 Rack travel in mm : 6.6...7.2  
 Del. quantity cm<sup>3</sup>/ : 1.0...1.2  
 100 s: (0.8...1.4)

Spread cm<sup>3</sup> : 0.2  
 100 s: (-)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1300  
 Del. quantity : 44.5...45.5  
 1000 : (42.5...47.5)

Spread cm<sup>3</sup> : 3.00  
 1000 : (4.50)

RATED SPEED

1st version  
 Control lever  
 position degrees: 109...117

Testing:

1st rack travel in: 7.20  
 Speed rpm : 1340...1345  
 2nd rack travel in: 4.00  
 Speed rpm : 1364...1377  
 3rd rack travel in: 4.00

Speed rpm : 1390...1420  
4th rack travel in: 1500  
Speed rpm : 0.30...1.40  
5th rack travel in: 1345...1355  
Speed rpm : 7.20

#### LOW IDLE 1

Control lever  
position degrees: -3  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.7

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 350  
Rack travel in mm : 6.60...6.80  
Rack travel in mm : 2.00  
Speed rpm : 450...510

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1300  
Rack travel in m: 8.20...8.30  
2nd speed rpm : 500  
Rack travel in m: 9.10...9.20  
3rd speed rpm : 900  
Rack travel in m: 8.90...9.10  
4th speed rpm : 1075  
Rack travel in m: 8.30...8.60

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 500  
Del.quantity cm3/ : 39.0...42.0  
1000 s: (36.5...44.5)  
Speed rpm : 900  
Del.quantity cm3/ : 48.0...50.0  
1000 s: (45.5...52.5)

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 78.0...88.0  
1000 s: (75.0...91.0)

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.60...7.20  
Del.quantity cm3/ : 10.0...12.0  
1000 s: (8.0...14.0)  
Spread cm3 : 2.00

Remarks:

D18

APPLICATION

Unimog

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 6,1 e 6  
 Edition : 13.12.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 274  
 Injection pump  
 Pump designation : PES6A95D410RS2471  
 EP type number : 0 410 896 952  
 Governor  
 Governor design. : RSV325...1150A8C707-6L  
 Governor no. : 0 420 232 532

Customer-spec. information  
 Customer : KHD

Engine : BF6L913C

1st version kW : 132.0  
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00  
 : (1.85...2.05)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 11.80...11.90

Del.quantity cm<sup>3</sup>/ : 10.8...11.0

100 s: (10.6...11.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 325.0

Rack travel in mm : 7.2...7.4

Del.quantity cm<sup>3</sup>/ : 0.9...1.5

100 s: (0.6...1.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 700

Del.quantity : 108.0...110.0

1000 : (106.0...112.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 102...110

Testing:

1st rack travel in: 10.80

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1235...1265

3rd rack travel in: 4.00  
Speed rpm : 1285...1315  
4th rack travel in: 14.00  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 67...75  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 6.8

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 325  
Rack travel in mm : 7.20...7.40  
Rack travel in mm : 2.00  
Speed rpm : 585...645

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 11.80...11.90  
2nd speed rpm : 500  
Rack travel in m: 11.80...12.00

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 11.80...11.90

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.90...10.00  
2nd pressure hPa : 373  
Rack travel in m: 11.50...11.60  
3rd pressure hPa : 93  
Rack travel in m: 10.10...10.30

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 850  
Del. quantity cm<sup>3</sup>/ : 103.5...106.5  
1000 s: (101.0...109.0)  
1000 s: (7.)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 62.0...64.0  
1000 s: (60.0...66.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.80  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 120.0...130.0  
1000 s: (117.0...133.0)  
Rack travel in mm : 15.50...15.90

Remarks:

:

Test electrically-released starting  
quantity (EES) with 12 volts

The stop position of the control rod  
must be easily reached with the stop  
lever

#### APPLICATION

Installation 2300



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 5,7 q 20
Edition : 02.01.90
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 876 312
Injection pump
Pump designation : PES6A90D410RS2293-1
EP type number : 0 410 896 077
Governor
Governor design. : RSV350...1400A0C745-1L
Governor no. : 0 420 232 530

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM 352 A

1st version kW : 115.0
Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25
: (2.10...2.30)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1380
Rack travel in mm : 11.90...12.00
Del.quantity cm3/ : 7.5...7.6
100 s: (7.3...7.8)
Spread cm3 : 0.3
100 s: (0.4)

2nd speed rpm : 350.0
Rack travel in mm : 7.8...8.0
Del.quantity cm3/ : 0.9...1.5
100 s: (0.7...1.7)
Spread cm3 : 0.2
100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...1.00

Governor spring pre-tension
Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1380
Del.quantity : 75.5...76.5
1000 : (73.5...78.5)
Spread cm3 : 3.00
1000 : (4.50)

RATED SPEED

1st version
Control lever
position degrees: 112...120

Testing:
1st rack travel in: 10.90
Speed rpm : 1420...1430
2nd rack travel in: 4.00
Speed rpm : 1510...1540
3rd rack travel in: 4.00

Speed rpm : 1530...1560  
4th rack travel in: 1700  
Speed rpm : 0.30...1.70

LOW IDLE 1  
Control lever  
position degrees: 79...87  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 7.4

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 350  
Rack travel in mm : 7.80...8.00  
Rack travel in mm : 2.00  
Speed rpm : 550...610

FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del.quantity cm3/ : 64.0...67.0  
1000 s: (61.5...69.5)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.90  
Speed rpm : 1420...1430

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 88.0...98.0  
1000 s: (85.0...101.0)  
Rack travel in mm : 16.20...16.60

Remarks:  
:



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE 8,4 a  
 Edition : 07.02.89  
 Replaces : 9.10.87  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 322  
 Injection pump  
 Pump designation : PES6A95D410RS2689  
 EP type number : 0 410 896 916  
 Governor  
 Governor design. : RSV400...1000A1C2187  
 L  
 Governor no. : 0 420 232 387

Customer-spec. information  
 Customer : LIEBHERR

Engine : D906 NA

1st version kW : 112.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 40...45

Overflow valve  
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80  
 : (2.65...2.85)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed rpm : 1000  
 Rack travel in mm : 10.40...10.50  
 Del. quantity cm<sup>3</sup>/ : 8.7...8.9  
 100 s: (8.5...9.1)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.6)

2nd speed rpm : 400.0  
 Rack travel in mm : 6.3...6.5  
 Del. quantity cm<sup>3</sup>/ : 1.0...1.6  
 100 s: (0.7...1.8)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: 3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Del. quantity : 87.0...89.0  
 1000 : (85.0...91.0)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 95...103

Testing:

1st rack travel in: 9.40  
 Speed rpm : 1040...1050  
 2nd rack travel in: 4.00  
 Speed rpm : 1050...1080  
 3rd rack travel in: 4.00  
 Speed rpm : 1090...1120  
 4th rack travel in: 1230  
 Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
 position degrees: 68...76  
 Setting point w/out bumper spring  
 Speed rpm : 400  
 Rack travel in mm : 5.9

Testing:

Speed rpm : 100  
 Minimum rack trave: 19.50  
 Speed rpm : 400  
 Rack travel in mm : 6.30...6.50  
 Rack travel in mm : 2.00  
 Speed rpm : 530...590

TORQUE CONTROL

Torque control curve - 1st version  
 1st speed rpm : 1000  
 Rack travel in m: 10.40...10.50  
 2nd speed rpm : 500  
 Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600  
 Del.quantity cm3/ : 77.5...80.5  
 1000 s: (75.0...83.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40  
 Speed rpm : 1040...1050

INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100  
 Del.quantity cm3/ : 120.0...130.0  
 1000 s: (117.0...133.0)  
 Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 400  
 Rack travel in mm : 6.30...6.50  
 Del.quantity cm3/ : 10.0...16.0  
 1000 s: (7.5...18.5)  
 Spread cm3 : 3.50  
 1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 o 3  
 Edition : 12.04.90  
 Replaces : 2.10.89  
 Test oil : ISO-4113

Combination no. : 0 400 876 327

Injection pump  
 Pump designation : PES6A95D32ORS2693  
 EP type number : 0 410 896 914  
 Governor  
 Governor design. : RSV300...1300AOC2195  
 R  
 Govenner no. : 0 420 233 200

Customer-spec. information  
 Customer : DAF

Engine : DNT 620

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Rack travel in mm : 7.50...10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 850

---

Rack travel in mm : 11.60...11.70

---

Del.quantity cm<sup>3</sup>/ : 7.7...7.9

---

100 s: (7.5...8.1)

---

Spread cm<sup>3</sup> : 0.3

---

100 s: (0.6)

---

2nd speed rpm : 300.0

Rack travel in mm : 6.5...6.7

Del.quantity cm<sup>3</sup>/ : 0.7...1.1

100 s: (0.4...1.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 700

Del.quantity : 77.0...79.0

1000 : (75.0...81.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 108...116

Testing:

1st rack travel in: 9.70  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1400...1430  
3rd rack travel in: 4.00  
Speed rpm : 1425...1455  
4th rack travel in: 1580  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 75...83  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.1

Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 300  
Rack travel in mm : 6.50...6.70  
Rack travel in mm : 2.00  
Speed rpm : 600...660

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1290  
Rack travel in m: 10.70...10.80  
2nd speed rpm : 500  
Rack travel in m: 11.60...11.70  
4th speed rpm : 1060  
Rack travel in m: 11.00...11.20

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 11.60...11.70

Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 11.10...11.30  
2nd pressure hPa : 250  
Rack travel in m: 11.50...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700  
Speed rpm : 1290  
Del.quantity cm3/ : 74.0...76.0  
1000 s: (71.5...78.5)

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 65.5...66.5  
1000 s: (63.5...68.5)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.70  
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...145.0  
1000 s: (127.0...148.0)  
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.50...6.70  
Del.quantity cm3/ : 7.0...11.0  
1000 s: (4.5...13.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 o 2  
 Edition : 12.01.90  
 Replaces : 8.9.89  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 332  
 Injection pump  
 Pump designation : PES6A95D320RS2693  
 EP type number : 0 410 896 914  
 Governor  
 Governor design. : RSV300...1300A0C2206  
 R  
 Governor no. : 0 420 233 204

Customer-spec. information  
 Customer : DAF

Engine : DNTD 620

1st version kW : 110.0  
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Rack travel in mm : 7.50...10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 10.80...10.90

Del.quantity cm<sup>3</sup>/ : 6.5...6.7

100 s: (6.3...6.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del.quantity cm<sup>3</sup>/ : 0.7...1.1

100 s: (0.4...1.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Del.quantity : 65.0...67.0

1000 : (63.0...69.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever  
position degrees: 108...116

Testing:

1st rack travel in: 9.20  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1400...1430  
3rd rack travel in: 4.00  
Speed rpm : 1425...1455  
4th rack travel in: 1570  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 76...84  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.9

Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 300  
Rack travel in mm : 6.30...6.50  
Rack travel in mm : 2.00  
Speed rpm : 590...650

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1290  
Rack travel in m: 10.20...10.40  
2nd speed rpm : 500  
Rack travel in m: 10.80...10.90  
4th speed rpm : 1005  
Rack travel in m: 10.50...10.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1290  
Del.quantity cm<sup>3</sup>/ : 69.0...71.0  
1000 s: (66.5...73.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.20  
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...145.0  
1000 s: (127.0...148.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.30...6.50  
Del.quantity cm<sup>3</sup>/ : 7.0...11.0  
1000 s: (4.5...13.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 o 1  
 Edition : 06.04.90  
 Replaces : 29.3.89  
 Test oil : ISO-4113

Combination no. : 0 400 876 333

Injection pump  
 Pump designation : PES6A95D32ORS2693Z  
 EP type number : 0 410 896 913  
 Governor  
 Governor design. : RSV300...1300AOC2195  
 R  
 Govenner no. : 0 420 233 200

Customer-spec. information  
 Customer : DAF

Engine : DNS 620

1st version kw : 150.0  
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Rack travel in mm : 7.50...10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 850

---

Rack travel in mm : 12.10...12.20

---

Del.quantity cm3/ : 8.8...8.9  
 100 s: (8.6...9.1)

---

Spread cm3 : 0.3  
 100 s: (0.6)

---

2nd speed rpm : 300.0  
 Rack travel in mm : 6.3...6.5  
 Del.quantity cm3/ : 0.7...1.1  
 100 s: (0.4...1.3)

---

Spread cm3 : 0.3  
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 850  
 Aneroid pressure h: 700  
 Del.quantity : 88.5...89.5  
 1000 : (86.5...91.5)

---

Spread cm3 : 3.50  
 1000 : (6.00)

RATED SPEED

1st version

Control Lever  
position degrees: 104...112

Testing:  
1st rack travel in: 10.70  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1410...1440  
3rd rack travel in: 4.00  
Speed rpm : 1440...1470  
4th rack travel in: 1595  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control Lever  
position degrees: 75...83  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.9

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 300  
Rack travel in mm : 6.30...6.50  
Rack travel in mm : 2.00  
Speed rpm : 580...640

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1290  
Rack travel in m: 11.70...11.90  
2nd speed rpm : 500  
Rack travel in m: 12.10...12.20  
4th speed rpm : 1020  
Rack travel in m: 11.90...12.10

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 12.10...12.20

Measurement  
Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 11.00...11.20  
2nd pressure hPa : 290  
Rack travel in m: 11.90...12.00  
3rd pressure hPa : 250  
Rack travel in m: 11.50...11.70

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 1290  
Del.quantity cm<sup>3</sup>/ : 88.0...90.0  
1000 s: (85.5...92.5)  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 65.5...66.5  
1000 s: (63.5...68.5)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.70  
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...145.0  
1000 s: (127.0...148.0)  
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.30...6.50  
Del.quantity cm<sup>3</sup>/ : 7.0...11.0  
1000 s: (4.5...13.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks: :

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 o 6  
 Edition : 07.02.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 342  
 Injection pump  
 Pump designation : PES6A95D32ORS2693W  
 EP type number : 0 410 896 907  
 Governor  
 Governor design. : RSV250...750A7C2206-1R  
 Governor no. : 0 420 233 209

Customer-spec. information  
 Customer : DAF

Engine : DNS 620

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 700  


---

 Rack travel in mm : 13.60...13.70  


---

 Del.quantity cm<sup>3</sup>/ : 10.1...10.3  
 100 s: (9.9...10.5)  


---

 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.6)

2nd speed rpm : 300.0  
 Rack travel in mm : 6.3...6.5  
 Del.quantity cm<sup>3</sup>/ : 0.7...1.1  
 100 s: (0.4...1.3)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Del.quantity : 101.0...103.0  
 1000 : (99.0...105.0)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 90...98

LOW IDLE 1

Control lever  
position degrees: 68...76  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.4  
Speed rpm : 300  
Rack travel in mm : 6.30...6.50  
Rack travel in mm : 2.00  
Speed rpm : 315...375

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.30...6.50  
Del.quantity cm<sup>3</sup>/ : 7.0...11.0  
1000 s: (4.5...13.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 o 7  
 Edition : 07.02.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 343  
 Injection pump  
 Pump designation : PES6A95D320RS2693V  
 EP type number : 0 410 896 908  
 Governor  
 Governor design. : RSV250...900A7C22G6-2R  
 Governor no. : 0 420 233 208

Customer-spec. information

Customer : DAF  
 Engine : DNS 620/1800

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000  
 Inlet press., bar : 1.50  
 Test nozzle holder assembly : 0 681 343 009  
 Opening pressure, bar : 172...175

Test lines : 1 680 750 015  
 Outside diameter x Wall thickness x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 2.00...2.10  
 : (1.95...2.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 700  
 Rack travel in mm : 13.60...13.70  
 Del. quantity cm<sup>3</sup>/ : 10.1...10.3  
 100 s: (9.9...10.5)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.6)

2nd speed rpm : 300.0  
 Rack travel in mm : 6.3...6.5  
 Del. quantity cm<sup>3</sup>/ : 0.7...1.1  
 100 s: (0.4...1.3)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Del. quantity : 101.0...103.0  
 1000 : (99.0...105.0)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 103...111

Testing:

1st rack travel in: 12.60  
Speed rpm : 895...900  
2nd rack travel in: 4.00  
Speed rpm : 935...950  
4th rack travel in: 1090  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control Lever  
position degrees: 72...80  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.4

Testing:  
Speed rpm : 100  
Speed rpm : 300  
Rack travel in mm : 6.30...6.50  
Rack travel in mm : 2.00  
Speed rpm : 315...375

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.30...6.50  
Del.quantity cm<sup>3</sup>/ : 7.0...11.0  
1000 s: (4.5...13.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 1 o 1  
Edition : 01.02.90  
Replaces : 18.8.89  
Test oil : ISO-4113

Combination no. : 0 400 876 344

Injection pump  
Pump designation : PES6A95D410RS2625  
EP type number : 0 410 896 926  
Governor  
Governor design. : RSV325...1250A2C1159

Governer no. : 0 420 232 490

Customer-spec. information  
Customer : KHD

Engine : BF6L913C

1st version kW : 130.0  
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00  
: (1.85...2.05)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.60...11.70

Del.quantity cm3/ : 9.3...9.5

100 s: (9.1...9.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.8)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 900

Del.quantity : 93.0...95.0

1000 : (91.0...97.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 92...100

Testing:

1st rack travel in: 10.60

Speed rpm : 1290...1300

2nd rack travel in: 4.00

Speed rpm : 1320...1350

3rd rack travel in: 4.00  
Speed rpm : 1370...1400  
4th rack travel in: 1540  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 63...71  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.0

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 350  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.00  
Speed rpm : 575...635

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 11.60...11.70  
2nd speed rpm : 500  
Rack travel in m: 12.00...12.10  
4th speed rpm : 1105  
Rack travel in m: 11.70...11.90

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.00...12.10

#### Measurement

Speed 1/min : 500  
1st pressure hPa : -  
Rack travel in m: 10.40...10.50  
2nd pressure hPa : 550  
Rack travel in m: 10.70...10.80

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 1000  
Del.quantity cm<sup>3</sup>/ : 94.5...97.5  
1000 s: (92.0...100.0)  
Aneroid pressure h: 900  
Speed rpm : 1150  
Del.quantity cm<sup>3</sup>/ : 92.0...95.0  
1000 s: (89.5...97.5)  
Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 54.0...56.0  
1000 s: (52.0...58.0)

#### RACK STOP ADJUSTMENT

Speed rpm : 500

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.60  
Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 120.0...130.0  
1000 s: (117.0...133.0)  
Rack travel in mm : 17.10...17.30

Remarks:

#### APPLICATION

Combine-harvester



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 5,9 c  
 Edition : 30.03.90  
 Replaces : 28.6.89  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 349  
 Injection pump  
 Pump designation : PES6A90D410RS2757  
 EP type number : 0 410 896 086  
 Governor  
 Governor design. : RSV425...1000A1C2233  
 L  
 Governor no. : 0 420 232 496

Customer-spec. information  
 Customer : IVECO-FIAT

Engine : 8065.25.080

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35  
 : (2.20...2.40)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.80...11.90

Del.quantity cm<sup>3</sup>/ : 9.0...9.1

100 s: (8.8...9.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

2nd speed rpm : 475.0

Rack travel in mm : 7.1...7.3

Del.quantity cm<sup>3</sup>/ : 1.0...1.6

100 s: (0.8...1.8)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 800

Del.quantity : 90.0...91.0

1000 : (88.0...93.0)

Spread cm<sup>3</sup> : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 101...109

Testing:

1st rack travel in: 10.80

Speed rpm : 1040...1050

2nd rack travel in: 4.00

Speed rpm : 1090...1120

3rd rack travel in: 4.00

Speed rpm : 1140...1170  
4th rack travel in: 1240  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 77...85  
Setting point w/out bumper spring  
Speed rpm : 475  
Rack travel in mm : 6.7

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 475  
Rack travel in mm : 7.10...7.30  
Rack travel in mm : 2.00  
Speed rpm : 495...555

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 11.80...11.90  
2nd speed rpm : 500  
Rack travel in m: 11.80...12.00

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 11.30...11.50

#### Measurement

Speed 1/min : 500  
2nd pressure hPa : 780  
Rack travel in m: 11.70...11.80

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 10.80  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 85.0...95.0  
1000 s: (82.0...98.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 o 5  
 Edition : 12.01.90  
 Replaces : 2.10.89  
 Test oil : ISO-4113

Combination no. : 0 400 876 356

Injection pump  
 Pump designation : PES6A95D32ORS2693  
 EP type number : 0 410 896 914  
 Governor  
 Governor design. : RSV300...1300AOC2195  
 -1R  
 Governor no. : 0 420 233 222

Customer-spec. information  
 Customer : DAF

Engine : DNT 620

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Rack travel in mm : 7.50...10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 850

---

Rack travel in mm : 11.60...11.70

---

Del. quantity cm<sup>3</sup>/ : 7.7...7.9

---

100 s: (7.5...8.1)

---

Spread cm<sup>3</sup> : 0.3

---

100 s: (0.6)

2nd speed rpm : 300.0  
 Rack travel in mm : 6.5...6.7  
 Del. quantity cm<sup>3</sup>/ : 0.7...1.1  
 100 s: (0.4...1.3)

Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 850  
 Aneroid pressure h: 700  
 Del. quantity : 77.0...79.0  
 1000 : (75.0...81.0)

Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 106...114

Testing:  
1st rack travel in: 9.70  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1400...1430  
3rd rack travel in: 4.00  
Speed rpm : 1425...1455  
4th rack travel in: 1580  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 75...83  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.1

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 300  
Rack travel in mm : 6.50...6.70  
Rack travel in mm : 2.00  
Speed rpm : 600...660

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1290  
Rack travel in m: 10.70...10.80  
2nd speed rpm : 500  
Rack travel in m: 11.60...11.70  
4th speed rpm : 1060  
Rack travel in m: 11.00...11.20

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 11.60...11.70

Measurement  
Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 11.10...11.30  
2nd pressure hPa : 250  
Rack travel in m: 11.50...11.60

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 1290  
Del.quantity cm<sup>3</sup>/ : 74.0...76.0  
1000 s: (71.5...78.5)

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 65.5...66.5  
1000 s: (63.5...68.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.70  
Speed rpm : 1340...1350

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...145.0  
1000 s: (127.0...148.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.50...6.70  
Del.quantity cm<sup>3</sup>/ : 7.0...11.0  
1000 s: (4.5...13.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,7 d 2  
 Edition : 06.03.90  
 Replaces : 28.9.89  
 Test oil : ISO-4113

Combination no. : 0 400 876 360

Injection pump  
 Pump designation : PES6A100D410RS2762  
 EP type number : 0 410 806 003  
 Governor  
 Governor design. : RSV425...1100A2C2225  
 L  
 Governor no. : 9 420 234 176

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6076ARW-06

1st version kW : 146.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05  
 : (2.90...3.10)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100  


---

 Rack travel in mm : 11.80...11.90  


---

 Del.quantity cm3/ : 11.4...11.6  
 100 s: (11.2...11.8)  


---

 Spread cm3 : 0.4  
 100 s: (0.6)  


---

2nd speed rpm : 425.0  
 Rack travel in mm : 4.9...5.1  
 Del.quantity cm3/ : 1.8...2.2  
 100 s: (1.5...2.4)  
 Spread cm3 : 0.6  
 100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Aneroid pressure h: 900  
 Del.quantity : 114.0...116.0  
 1000 : (112.0...118.0)  
 Spread cm3 : 4.00  
 1000 : (6.50)

RATED SPEED

1st version  
 Control lever  
 position degrees: 40...48

Testing:

1st rack travel in: 10.80  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1205...1215  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 4.5

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 4.90...5.10

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.80...11.90  
2nd speed rpm : 650  
Rack travel in m: 13.70...13.90

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.70...13.90

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.70...11.90  
2nd pressure hPa : 535  
Rack travel in m: 12.30...12.40  
3rd pressure hPa : 720  
Rack travel in m: 13.30...13.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900  
Speed rpm : 650  
Del.quantity cm3/ : 147.5...150.5  
1000 s: (145.0...153.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 129.0...133.0  
1000 s: (126.0...136.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.80  
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 100.0...120.0  
1000 s: (95.0...125.0)

LOW IDLE

Speed rpm : 425  
Rack travel in mm : 4.90...5.10  
Del.quantity cm3/ : 18.0...22.0  
1000 s: (15.5...24.5)  
Spread cm3 : 6.00  
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE29298

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Start-of-delivery mark = 13,5° after  
start of delivery cyl. 1.

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,7 d 3
Edition : 06.03.90
Replaces : 2.5.89
Test oil : ISO-4113
Combination no. : 0 400 876 361
Injection pump
Pump designation : PES6A100D410RS2762
EP type number : 0 410 806 003
Governor
Governor design. : RSV400...1100A2C2204
-4L
Governer no. : 0 420 232 500

Customer-spec. information
Customer : JOHN DEERE

Engine : 6076 ADW-01

1st version kW : 146.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values \_\_\_\_\_

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05
: (2.90...3.10)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Tolerance + - ° : 0.50 (0.75)
Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100
Rack travel in mm : 11.60...11.70
Del.quantity cm3/ : 11.2...11.4
100 s: (11.0...11.6)
Spread cm3 : 0.4
100 s: (0.6)

2nd speed rpm : 400.0
Rack travel in mm : 5.8...6.0
Del.quantity cm3/ : 3.1...3.5
100 s: (2.8...3.7)
Spread cm3 : 0.6
100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Del.quantity : 112.0...114.0
1000 : (110.0...116.0)
Spread cm3 : 4.00
1000 : (6.50)

RATED SPEED

1st version
Control lever
position degrees: 40...48

Testing:

1st rack travel in: 10.60  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1210...1220  
3rd rack travel in: 4.00  
Speed rpm : 1220...1250  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.4

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.80...6.00

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.60...11.70

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.60  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...120.0  
1000 s: (95.0...125.0)

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Del.quantity cm<sup>3</sup>/ : 31.0...35.0  
1000 s: (28.5...37.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: JOHN DEERE # RE35847

Start-of-delivery mark = 13,5° after  
start of delivery cyl. 1.

Starting/full-load transition speed  
from holding magnet = 450 1/min.



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,7 e  
 Edition : 06.03.90  
 Replaces : 7.4.89  
 Test oil : ISO-4113

Combination no. : 0 400 876 362

Injection pump  
 Pump designation : PES6A100D410RS2764  
 EP type number : 0 410 806 004  
 Governor  
 Governor design. : RSV600...1100A2C2161  
 -6L  
 Governor no. : 0 420 232 505

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6466 AZ

1st version kW : 152.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

Prestroke mm : 2.45...2.55  
 : (2.40...2.60)

Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 12.9...13.1

100 s : (12.7...13.3)

Spread cm3 : 0.4

100 s : (0.6)

2nd speed rpm : 600.0

Rack travel in mm : 5.6...5.8

Del.quantity cm3/ : 1.4...1.8

100 s : (1.1...2.0)

Spread cm3 : 0.6

100 s : (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del.quantity : 129.5...131.5

1000 : (127.5...133.5)

Spread cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 37...45

Testing:

1st rack travel in: 11.50

Speed rpm : 1145...1155

2nd rack travel in: 4.00  
Speed rpm : 1195...1205  
3rd rack travel in: 4.00  
Speed rpm : 1215...1245  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 600  
Rack travel in mm : 5.2

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 600  
Rack travel in mm : 5.60...5.80

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.50...12.60

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.00...9.20  
2nd pressure hPa : 175  
Rack travel in m: 10.10...10.20  
3rd pressure hPa : 285  
Rack travel in m: 11.80...12.20

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 68.5...72.5  
1000 s: (65.5...75.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.50  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 180.0...200.0  
1000 s: (175.0...205.0)

#### LOW IDLE

Speed rpm : 600  
Rack travel in mm : 5.60...5.80  
Del.quantity cm<sup>3</sup>/ : 14.0...18.0  
1000 s: (11.5...20.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

Remarks:  
: JOHN DEERE # RE35281

Start-of-delivery mark at control-rod  
travel 10.5 mm and 15° after start of  
delivery.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,7 f  
 Edition : 06.03.90  
 Replaces : 28.9.89  
 Test oil : ISO-4113

Combination no. : 0 400 876 363

Injection pump  
 Pump designation : PES6A100D410RS2765  
 EP type number : 0 410 806 005  
 Governor  
 Governor design. : RSV400...1100A2C2204  
 -5L

Governer no. : 0 420 232 506

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6466AT-01

1st version kW : 125.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.45...2.55  
 : (2.40...2.60)

Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.90...11.00

Del.quantity cm<sup>3</sup>/ : 11.0...11.2

100 s : (10.8...11.4)

Spread cm<sup>3</sup> : 0.4

100 s : (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.9...6.1

Del.quantity cm<sup>3</sup>/ : 1.6...2.0

100 s : (1.3...2.2)

Spread cm<sup>3</sup> : 0.6

100 s : (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 110.0...112.0

1000 : (108.0...114.0)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing:

1st rack travel in: 9.90

Speed rpm : 1145...1155

2nd rack travel in: 4.00

Speed rpm : 1220...1230  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.90...6.10

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 10.90...11.00  
2nd speed rpm : 700  
Rack travel in m: 11.40...11.60

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 700  
Del.quantity cm3/ : 114.5...117.5  
1000 s: (112.0...120.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.90  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 180.0...200.0  
1000 s: (175.0...205.0)

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.90...6.10  
Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm3 : 6.00  
1000 s: (8.00)

#### Remarks:

: JOHN DEERE # RE35282

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

Start-of-delivery mark at control-rod  
travel 10.5 mm and 15° after start of  
delivery.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 c 7
Edition : 23.03.90
Replaces : 7.7.89
Test oil : ISO-4113
Combination no. : 0 400 876 367
Injection pump
Pump designation : PES6A90D410RS2710-1
EP type number : 0 410 896 084
Governor
Governor design. : RSV350...750A0C2240L
Governor no. : 0 420 232 527

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM 366

1st version kW : 60.0
Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values \_\_\_\_\_

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
: (2.20...2.40)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700
Rack travel in mm : 12.20...12.30
Del.quantity cm3/ : 6.4...6.5
100 s: (6.2...6.7)
Spread cm3 : 0.3
100 s: (0.5)

2nd speed rpm : 350.0
Rack travel in mm : 8.2...8.4
Del.quantity cm3/ : 0.6...1.2
100 s: (0.4...1.4)
Spread cm3 : 0.2
100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -
Speed rpm : 600
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Del.quantity : 64.0...65.0
1000 : (62.0...67.0)
Spread cm3 : 3.00
1000 : (5.00)

RATED SPEED

1st version
Control lever
position degrees: 82...90

Testing:
1st rack travel in: 11.20
Speed rpm : 750...755
2nd rack travel in: 4.00
Speed rpm : 780...793
4th rack travel in: 900
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 70...78

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 8.2

Testing:

Speed rpm : 100

Minimum rack trave: 19.50

Speed rpm : 350

Rack travel in mm : 8.10...8.30

Rack travel in mm : 2.00

Speed rpm : 380...420

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 78.0...88.0

1000 s: (75.0...91.0)

Rack travel in mm : 16.50...16.90

Remarks:

:

Observe VDT-I-420/120

APPLICATION

Generator



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 1 o 4  
 Edition : 01.12.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 368  
 Injection pump  
 Pump designation : PES6A95D410RS2625  
 EP type number : 0 410 896 926  
 Governor  
 Governor design. : RSV325...1250A2C2205  
 -2L  
 Governor no. : 0 420 232 531

Customer-spec. information  
 Customer : KHD

Engine : BF6L913C  
 1st version kW : 131.0  
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test lines : 1 680 750 014  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 1.90...2.00  
 : (1.85...2.05)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250  
 Rack travel in mm : 11.60...11.70  
 Del.quantity cm<sup>3</sup>/ : 9.6...9.8  
 100 s : (9.4...10.0)  
 Spread cm<sup>3</sup> : 0.3  
 100 s : (0.6)  
 2nd speed rpm : 325.0  
 Rack travel in mm : 6.4...6.6  
 Del.quantity cm<sup>3</sup>/ : 1.0...1.6  
 100 s : (0.7...1.8)  
 Spread cm<sup>3</sup> : 0.3  
 100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1250  
 Aneroid pressure h: 900  
 Del.quantity : 96.0...98.0  
 1000 : (94.0...100.0)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 93...101

Testing:

1st rack travel in: 10.60  
 Speed rpm : 1290...1300  
 2nd rack travel in: 4.00  
 Speed rpm : 1330...1360

3rd rack travel in: 4.00  
Speed rpm : 1380...1410  
4th rack travel in: 1545  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 63...71  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 6.0

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 325  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.00  
Speed rpm : 560...620

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 11.60...11.70  
2nd speed rpm : 500  
Rack travel in m: 11.60...11.80

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 11.60...11.80

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.00...10.10  
2nd pressure hPa : 330  
Rack travel in m: 11.20...11.30  
3rd pressure hPa : 160  
Rack travel in m: 10.60...10.80

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 850  
Del.quantity cm<sup>3</sup>/ : 91.5...94.5  
1000 s: (89.0...97.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 58.0...60.0  
1000 s: (56.0...62.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.60  
Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 120.0...130.0  
1000 s: (117.0...133.0)  
Rack travel in mm : 15.80...16.20

Remarks:

:



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 c 8  
 Edition : 19.03.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 370  
 Injection pump  
 Pump designation : PES6A90D410RS2710  
 EP type number : 0 410 896 082  
 Governor  
 Governor design. : RSV750..125GA0C2006-  
 6L  
 Governor no. : 0 420 232 534

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM 366

1st version kw : 92.0  
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35  
 : (2.20...2.40)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1230

Rack travel in mm : 11.40...11.50

Del.quantity cm<sup>3</sup>/ : 6.8...6.9

100 s: (6.6...7.1)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

2nd speed rpm : 750.0

Rack travel in mm : 6.5...6.7

Del.quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.2...2.2)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1230

Del.quantity : 68.5...69.5

1000 : (66.5...71.5)

Spread cm<sup>3</sup> : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 95...103

Testing:

1st rack travel in: 10.40

Speed rpm : 1270...1280

2nd rack travel in: 4.00

Speed rpm : 1316...1333

4th rack travel in: 1425

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 78...86  
Setting point w/out bumper spring  
Speed rpm : 750  
Rack travel in mm : 6.6

Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 750  
Rack travel in mm : 6.50...6.70  
Rack travel in mm : 2.00  
Speed rpm : 760...820

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 52.0...54.0  
1000 s: (49.5...56.5)

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 78.0...88.0  
1000 s: (75.0...91.0)  
Rack travel in mm : 17.00...17.40

Remarks:

:

APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 h15  
 Edition : 02.05.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 371  
 Injection pump  
 Pump designation : PES6A100D41ORS2676-1  
 EP type number : 9 410 230 024  
 Governor  
 Governor design. : RSV450...1050AOC2204  
 -6L  
 Governor no. : 0 420 232 539

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6466AT13

1st version kW : 120.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

E27

Prestroke mm : 2.45...2.55  
 : (2.40...2.60)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.10...10.20

Del. quantity cm<sup>3</sup>/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

2nd speed rpm : 450.0

Rack travel in mm : 5.4...5.6

Del. quantity cm<sup>3</sup>/ : 1.7...2.1

100 s: (1.5...2.3)

Spread cm<sup>3</sup> : 0.6

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del. quantity : 101.5...103.5

1000 : (99.5...105.5)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control lever

position degrees: 35...43

Testing:

1st rack travel in: 9.10  
Speed rpm : 1095...1105  
2nd rack travel in: 4.00  
Speed rpm : 1180...1190  
3rd rack travel in: 4.00  
Speed rpm : 1185...1215  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 450  
Rack travel in mm : 5.0

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 450  
Rack travel in mm : 5.40...5.60

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 10.10...10.20  
2nd speed rpm : 650  
Rack travel in m: 10.70...10.90

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 112.0...116.0  
1000 s: (110.0...118.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.10  
Speed rpm : 1095...1105

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 190.0...210.0  
1000 s: (185.0...215.0)

#### LOW IDLE

Speed rpm : 450  
Rack travel in mm : 5.40...5.60  
Del.quantity cm<sup>3</sup>/ : 17.5...21.5  
1000 s: (15.5...23.5)

Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: JOHN DEERE # RE44344  
Start-of-delivery mark at control-rod  
travel 10.5 mm and 15° after start of  
delivery.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : HAN 10,8 f7  
 Edition : 24.02.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 076 008  
 Injection pump  
 Pump designation : PE6A100D32ORS3030-1  
 EP type number : 0 411 006 019  
 Governor  
 Governor design. : RSV350...700AOC2228R  
 Governor no. : 0 420 233 214

Customer-spec. information  
 Customer : HANOMAG

Engine : D963A2/G

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.80...1.90  
 : (1.75...1.95)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 5.50...6.50

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.00...11.10

Del. quantity cm<sup>3</sup>/ : 16.4...16.6

100 s: (16.2...16.8)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0  
 Rack travel in mm : 5.9...6.1

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del. quantity : 164.0...166.0

1000 : (162.0...168.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 85...93

Testing:

1st rack travel in: 10.00

Speed rpm : 740...750

2nd rack travel in: 4.00

Speed rpm : 825...855

4th rack travel in: 980

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 74...82

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 6.0

Testing:

Speed rpm : 100

Minimum rack travel: 19.50

Speed rpm : 350

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 375...435

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 700

Rack travel in m: 11.00...11.10

2nd speed rpm : 500

Rack travel in m: 11.00...11.20

5th speed rpm : 370

Rack travel in m: 12.20...12.80

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00

Speed rpm : 740...750

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 215.0...225.0

1000 s: (212.0...228.0)

Rack travel in mm : 19.50...21.00

Remarks:

:

APPLICATION

Generator set

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : BAO 31,8 d1  
 Edition : 02.01.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 830 714  
 Injection pump  
 Pump designation : PE12P130A12ORS3127  
 EP type number : 0 411 830 704  
 Governor  
 Governor design. : RQV400...750PA934  
 Governor no. : 0 421 813 816

Customer-spec. information  
 Customer : BAUDOUIN

Engine : 12 P 15-2

## TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder assembly : 1 688 901 019

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,8

Test lines : 1 680 750 074

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 12- 9- 4- 5- 8-  
11- 2- 3- 10- 7- 6

Phasing : 0-45-60-105-120-165-  
180-225-240-285-300-  
345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.60...12.70

Del.quantity cm<sup>3</sup>/ : 30.7...31.0

100 s: (30.3...31.3)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

2nd speed rpm : 400.0

Rack travel in mm : 4.7...5.1

Del.quantity cm<sup>3</sup>/ : 2.1...2.7

100 s: (1.7...3.1)

Spread cm<sup>3</sup> : 1.0

100 s: (1.4)

(B) Setting of injection pump with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 375  
travel mm : 0.50...0.70

2nd speed rpm : 450  
travel mm : 2.00...2.10

3rd speed rpm : 650  
travel mm : 2.00...2.10

4th speed rpm : 750  
travel mm : 3.30...5.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Del.quantity : 307.0...310.0  
 1000 : (303.5...313.5)  
 Spread cm<sup>3</sup> : 6.00  
 1000 : (10.00)

## RATED SPEED

1st version

Testing:

1st rack travel in: 11.60  
Speed rpm : 750...755  
2nd rack travel in: 4.00  
Speed rpm : 776...789  
4th rack travel in: 900  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 2...10

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.40  
Speed rpm : 400  
Rack travel in mm : 4.80...5.00  
Rack travel in mm : 2.00

START CUT-OUT

Speed 1/min : 340 (360)

Remarks:  
:

APPLICATION

Generator



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : BAO 31,8 d  
 Edition : 02.01.90  
 Replaces : 2.10.89  
 Test oil : ISO-4113  
 Combination no. : 0 401 830 715  
 Injection pump  
 Pump designation : PE12P130A12ORS3127  
 EP type number : 0 411 830 704  
 Governor  
 Governor design. : RQV350...900PA934-2  
 Governor no. : 0 421 813 818

Customer-spec. information  
 Customer : BAUDOUIN

Engine : 12 P 15-2

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 074

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 12- 9- 4- 5- 8-  
 11- 2- 3- 10- 7- 6

Phasing : 0-45-60-105-120-165-  
 180-225-240-285-300-  
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900  


---

 Rack travel in mm : 12.90...13.00  


---

 Del.quantity cm<sup>3</sup>/ : 30.9...31.2  


---

 100 s: (30.4...31.6)  


---

 Spread cm<sup>3</sup> : 0.6  


---

 100 s: (1.0)  


---

2nd speed rpm : 350.0  
 Rack travel in mm : 5.2...5.6  
 Del.quantity cm<sup>3</sup>/ : 2.0...2.6  
 100 s: (1.6...3.0)  
 Spread cm<sup>3</sup> : 1.0  
 100 s: (1.4)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
 travel mm : 1.10...1.30  
 2nd speed rpm : 500  
 travel mm : 3.10...3.80  
 3rd speed rpm : 750  
 travel mm : 6.00...6.40  
 4th speed rpm : 900  
 travel mm : 7.90...8.10

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 940  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 900  
 Del.quantity : 309.0...312.0  
 1000 : (304.0...316.0)  
 Spread cm<sup>3</sup> : 6.00  
 1000 : (10.00)

RATED SPEED

1st version

Control lever

position degrees: 58...66

Testing:

1st rack travel in: 11.90

Speed rpm : 940...950

2nd rack travel in: 4.00

Speed rpm : 1005...1035

4th rack travel in: 1150

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 26...34

Testing:

Speed rpm : 100

Minimum rack travel: 6.90

Speed rpm : 350

Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

Speed rpm : 350...450

START CUT-OUT

Speed 1/min : 270 (290)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.90

Speed rpm : 940...950

Remarks:

:

APPLICATION

Navy

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 20,9 d2
Edition : 05.08.88
Replaces : -
Test oil : ISO-4113
Combination no. : 0 401 840 095
Injection pump
Pump designation : PE12P110A520LS839-1
EP type number : 0 411 810 043
Governor
Governor design. : RQV250...1150PA670
Governor no. : 0 421 813 387

Customer-spec. information
Customer : MAN

Engine : D2542 MTE
1st version kW : 386.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10
: (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 12- 1- 5- 9- 8- 3-
4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
180-225-240-285-300-
345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 12.30...12.40

Del.quantity cm3/ : 14.2...14.5

100 s: (13.9...14.7)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 6.8...7.0

Del.quantity cm3/ : 1.4...1.9

100 s: (1.1...2.1)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 1.20...1.30

2nd speed rpm : 550
travel mm : 3.50...4.00

3rd speed rpm : 950
travel mm : 6.60...6.90

4th speed rpm : 1150
travel mm : 8.20...8.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1170

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 700

Del.quantity : 142.0...145.0

1000 : (139.5...147.5)

Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 61...69

Testing:  
1st rack travel in: 11.30  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1295...1325  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 8...16

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.40  
Speed rpm : 250  
Rack travel in mm : 6.80...7.00

CONSTANT REGULATION  
Speed rpm : 290...395

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 12.30...12.40

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.50...10.60  
2nd pressure hPa : 280  
Rack travel in m: 11.80...11.90  
3rd pressure hPa : 180  
Rack travel in m: 10.90...11.10

#### START CUT-OUT

Speed 1/min : 200 (220)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 98.0...101.0  
1000 s: (95.5...103.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.30  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (146.0...174.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.80...7.00  
Del.quantity cm<sup>3</sup>/ : 14.0...19.0  
1000 s: (11.5...21.5)  
Spread cm<sup>3</sup> : 4.50  
1000 s: (7.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 20,9 z  
 Edition : 07.04.89  
 Replaces : 16.5.88  
 Test oil : ISO-4113  
 Combination no. : 0 401 840 108  
 Injection pump  
 Pump designation : PE12P110A520/4LS849  
 EP type number : 0 411 810 041  
 Governor  
 Governor design. : RGV250...1050PA889  
 Governor no. : 0 421 813 696

Customer-spec. information  
 Customer : MAN

Engine : D2842ME

1st version kW : 305.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 12- 1- 5- 9- 8- 3-  
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
 180-225-240-285-300-  
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.40...10.50

Del.quantity cm<sup>3</sup>/ : 12.8...13.1

100 s: (12.6...13.4)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 5.5...5.7

Del.quantity cm<sup>3</sup>/ : 1.5...2.0

100 s: (1.2...2.2)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 0.90...1.30

2nd speed rpm : 800

travel mm : 5.30...5.70

3rd speed rpm : 1050

travel mm : 7.50...7.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1125

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 128.5...131.5

1000 : (126.0...134.0)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

RATED SPEED

1st version  
Control lever  
position degrees: 113...121

Testing:  
1st rack travel in: 9.40  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 63...71

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.10  
Speed rpm : 250  
Rack travel in mm : 5.50...5.70

CONSTANT REGULATION  
Speed rpm : 385...510

START CUT-OUT

Speed 1/min : 190 (210)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.40  
Speed rpm : 1090...1100

Remarks:  
: MAN-NR. 2-7905

APPLICATION

Rail car

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 21,9 k  
 Edition : 12.11.87  
 Replaces : 12.9.86  
 Test oil : ISO-4113

Combination no. : 0 401 840 742

Injection pump  
 Pump designation : PE12P120A320LS3836-1  
 EP type number : 0 411 820 718  
 Governor  
 Governor design. : RQV350...1150PA493-3  
 Governor no. : 0 421 813 422

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM 424 LA

1st version kW : 452.0  
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 150...170

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 12- 1- 5- 9- 8- 3-  
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
 180-225-240-285-300-  
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 12.10...12.20

Del.quantity cm<sup>3</sup>/ : 18.0...18.2

100 s: (17.7...18.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0  
 Rack travel in mm : 5.0...5.2  
 Del.quantity cm<sup>3</sup>/ : 1.4...2.0  
 100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
 travel mm : 2.20...2.30

2nd speed rpm : 510  
 travel mm : 3.20...3.50

3rd speed rpm : 1150  
 travel mm : 7.50...8.80

4th speed rpm : 1200  
 travel mm : 8.90...9.10

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1180

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1150  
Aneroid pressure h: 700  
Del.quantity : 180.0...182.0  
1000 : (177.0...185.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 61...69

Testing:  
1st rack travel in: 11.10  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1235...1265  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 8...16

Testing:  
Speed rpm : 100  
Minimum rack trave: 6.20  
Speed rpm : 350  
Rack travel in mm : 4.50...4.70

CONSTANT REGULATION  
Speed rpm : 400...600

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.00...10.20

Measurement  
Speed 1/min : 500

1st pressure hPa : 470  
Rack travel in m: 10.70...10.90  
2nd pressure hPa : 540  
Rack travel in m: 11.40..11.60

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 182.0...188.0  
1000 s: (179.0...191.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 700  
Speed rpm : 1150  
Del.quantity cm<sup>3</sup>/ : 134.0...138.0 \*  
1000 s: (131.0...141.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 131.0...133.0  
1000 s: (128.0...136.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.10  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (146.0...174.0)

Remarks:

:

\* = Set at reduced-delivery stop.

Adjust stop lever to 0.5...1.0 mm  
before stop.



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 21,9 n 1  
 Edition : 05.03.90  
 Replaces : 12.9.86  
 Test oil : ISO-4113  
 Combination no. : 0 401 840 750  
 Injection pump  
 Pump designation : PE12P110A32OLS3837-2  
 EP type number : 0 411 810 711  
 Governor  
 Governor design. : RQV350...1150PA378-4  
 Governor no. : 0 421 813 521

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM 424

1st version kW : 309.0  
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 150...170

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 12- 1- 5- 9- 8- 3-  
 : 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
 : 180-225-240-285-300-

Phasing : 345  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 11.40...11.50

Del.quantity cm<sup>3</sup>/ : 12.2...12.4

100 s: (11.9...12.7)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

2nd speed rpm : 350.0

Rack travel in mm : 7.7...8.0

Del.quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.2)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1200

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 122.0...124.0

1000 : (119.0...127.0)

Spread cm<sup>3</sup> : 4.00

1000 : (8.00)

RATED SPEED

1st version

Control Lever

position degrees: 60...68

Testing:

1st rack travel in: 10.40

Speed rpm : 1170...1180

2nd rack travel in: 4.00  
Speed rpm : 1235...1265  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 16...22

Testing:  
Speed rpm : 100  
Minimum rack trave: 9.00  
Speed rpm : 350  
Rack travel in mm : 7.80...8.00

CONSTANT REGULATION  
Speed rpm : 375...485

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 96.0...100.0  
1000 s: (93.0...103.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (9.00)  
Speed rpm : 1150  
Del.quantity cm<sup>3</sup>/ : 90.0...94.0 \*  
1000 s: (87.0...97.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (9.00)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.40  
Speed rpm : 1170...1180

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...140.0  
1000 s: (126.0...144.0)

Remarks:

:

Adjust stop lever to 0.5...1.0 mm  
before stop.

\* = Set at reduced-delivery stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SSC 24,7 a  
 Edition : 05.03.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 840 761  
 Injection pump  
 Pump designation : PE12P120A520RS3168-1  
 EP type number : 0 411 820 727  
 Governor  
 Governor design. : RQV350...1250PA852  
 Governor no. : 0 421 813 601

Customer-spec. information  
 Customer : SSCM

Engine : UD20-V12

1st version kW : 810.0  
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 8- 5- 10- 3- 7-  
 : 6- 11- 2- 9- 4- 12

Phasing : 0-15-60-75-120-135-  
 : 180-195-240-255-300-  
 Phasing : 315  
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250  


---

 Rack travel in mm : 13.00...13.10  


---

 Del.quantity cm<sup>3</sup>/ : 28.9...29.1  
 100 s: (28.6...29.4)  


---

 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 350.0  
 Rack travel in mm : 4.5...4.9  
 Del.quantity cm<sup>3</sup>/ : 2.0...2.3  
 100 s: (1.7...2.6)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
 travel mm : 1.40...1.60  
 2nd speed rpm : 900  
 travel mm : 4.90...5.20  
 3rd speed rpm : 1250  
 travel mm : 7.80...8.10

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1300  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1250  
 Del.quantity : 289.0...291.0  
 1000 : (286.0...294.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
Control lever  
position degrees: 118...126

Testing:  
1st rack travel in: 12.00  
Speed rpm : 1290...1300  
2nd rack travel in: 4.00  
Speed rpm : 1400...1430  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 63...71

Testing:  
Speed rpm : 100  
Minimum rack trave: 6.20  
Speed rpm : 350  
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION  
Speed rpm : 420...540

START CUT-OUT

Speed 1/min : 270 (290)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.00  
Speed rpm : 1290...1300

Remarks:  
:

APPLICATION

Navy

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : BAO 14,9 b  
 Edition : 05.03.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 840 768  
 Injection pump  
 Pump designation : PE12P110A52ORS3241  
 EP type number : 0 411 810 713  
 Governor  
 Governor design. : RQV325...1500PA931  
 Governor no. : 0 421 813 805

Customer-spec. information  
 Customer : BAUDOUIN

Engine : 12 F 11 SRE,GE

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test lines : 1 680 750 015  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 3.60...3.70  
 : (3.55...3.75)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 12- 9- 5- 3- 8-  
 : 11- 4- 2- 10- 7- 6

Phasing : 0-45-60-105-120-165-  
 180-225-240-285-300-  
 345  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1500  
 Rack travel in mm : 11.00...11.10  
 Del.quantity cm<sup>3</sup>/ : 12.4...12.7  
 100 s : (12.1...12.9)  
 Spread cm<sup>3</sup> : 0.4  
 100 s : (0.7)  
 2nd speed rpm : 325.0  
 Rack travel in mm : 6.9...7.1  
 Del.quantity cm<sup>3</sup>/ : 1.3...1.8  
 100 s : (1.0...2.0)  
 Spread cm<sup>3</sup> : 0.4  
 100 s : (0.7)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
 travel mm : 1.00...1.40  
 2nd speed rpm : 1000  
 travel mm : 3.20...3.60  
 3rd speed rpm : 1500  
 travel mm : 8.10...8.30  
 4th speed rpm : 1800  
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1700  
 Rack travel in mm : 5.00...8.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1500  
 Aneroid pressure h: 900  
 Del.quantity : 124.0...127.0  
 1000 : (121.5...129.5)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (7.50)

RATED SPEED

1st version  
Control lever  
position degrees: 51...59

Testing:  
1st rack travel in: 10.00  
Speed rpm : 1540...1550  
2nd rack travel in: 4.00  
Speed rpm : 1630...1660  
4th rack travel in: 1750  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 18...26

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.50  
Speed rpm : 325  
Rack travel in mm : 6.90...7.10

CONSTANT REGULATION  
Speed rpm : 300...400

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 11.00...11.10

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.50...9.60  
2nd pressure hPa : 400  
Rack travel in m: 10.50...10.60

START CUT-OUT

Speed 1/min : 275 (295)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 73.0...77.0  
1000 s: (70.5...79.5)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.00  
Speed rpm : 1540...1550

INTERMEDIATE RATED SPEED  
Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100

LOW IDLE

Speed rpm : 325  
Rack travel in mm : 6.90...7.10  
Del. quantity cm<sup>3</sup>/ : 13.0...18.0  
1000 s: (10.5...20.5)  
Spread cm<sup>3</sup> : 4.50  
1000 s: (7.50)

Remarks:  
:

APPLICATION

Navy

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 21,0 d  
 Edition : 02.01.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 840 769  
 Injection pump  
 Pump designation : PE12P120A520/4LS3854  
 EP type number : 0 411 820 728  
 Governor  
 Governor design. : RQ750PA933  
 Governer no. : 0 421 801 495

Customer-spec. information  
 Customer : MAN

Engine : D2842LE

1st version kW : 380.0  
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30  
 : (4.15...4.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 12- 1- 5- 9- 8- 3-  
 : 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
 : 180-225-240-285-300-  
 Phasing : 345  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 700  


---

 Rack travel in mm : 11.70...11.80  


---

 Del.quantity cm<sup>3</sup>/ : 21.5...21.7  
 100 s: (21.2...22.0)  


---

 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 4.4...4.6  
 Del.quantity cm<sup>3</sup>/ : 1.7...2.3  
 100 s: (1.4...2.6)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Del.quantity : 215.0...217.0  
 1000 : (212.0...220.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Testing:  
 1st rack travel in: 10.70  
 Speed rpm : 750...755  
 2nd rack travel in: 4.00  
 Speed rpm : 786...799  
 4th rack travel in: 950  
 Speed rpm : 0.00...1.00

Remarks:  
 : MAN-NR. 2-7978

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 21,0 d1  
 Edition : 23.03.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 840 769A  
 Injection pump  
 Pump designation : PE12P120A520/4LS3854  
 EP type number : 0 411 820 728  
 Governor  
 Governor design. : RQ750PA933  
 Governor no. : 0 421 801 495

Cust. part no. : 2-7981

Customer-spec. information  
 Customer : MAN

Engine : D2842LE

1st version kW : 380.0  
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30  
 : (4.15...4.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 12- 1- 5- 9- 8- 3-  
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
 180-225-240-285-300-  
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.00...13.10

Del.quantity cm<sup>3</sup>/ : 25.0...25.2

100 s: (24.7...25.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.4...4.6

Del.quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 250.0...252.0

1000 : (247.0...255.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 12.00

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 786...799

4th rack travel in: 950

Speed rpm : 0.00...1.00



STARTING FUEL DELIVERY

Del.quantity cm<sup>3</sup>/ : 165.0...185.0  
1000 s: (161.0...189.0)

Remarks:

:

APPLICATION

Generator set



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,8 a 1
Edition : 16.02.90
Replaces : 11.3.88
Test oil : ISO-4113
Combination no. : 0 401 846 194
Injection pump
Pump designation : PE6P100A720RS15
EP type number : 0 411 806 106
Governor
Governor design. : RQ250/1100PA111DR
Governor no. : 0 421 803 045

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM 355

1st version kW : 154.5
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1090

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 10.0...10.2

100 s: (9.8...10.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.5)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.50...16.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1090

Del.quantity : 100.0...102.0

1000 : (98.0...104.0)

Spread cm3 : 3.00

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.0

Testing:

1st rack travel in: 11.00

Speed rpm : 1135...1150

2nd rack travel in: 4.00  
Speed rpm : 1210...1240  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6.0

#### Testing:

Speed rpm : 100  
Minimum rack trave: 7.00  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 385...425

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1090  
Rack travel in m: 12.00...12.10  
2nd speed rpm : 450  
Rack travel in m: 12.60...12.70  
3rd speed rpm : 700  
Rack travel in m: 12.30...12.40

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 700  
Del.quantity cm3/ : 96.0...99.0  
1000 s: (94.0...101.0)  
Speed rpm : 450  
Del.quantity cm3/ : 90.0...94.0  
1000 s: (88.0...96.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 1135...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 150.0...170.0  
1000 s: (146.0...174.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 13,8 a  
 Edition : 01.02.90  
 Replaces : 10.2.89  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 225  
 Injection pump  
 Pump designation : PE6P120A720RS167  
 EP type number : 0 411 826 053  
 Governor  
 Governor design. : RQ225/1100PA118  
 Governor no. : 0 421 801 027

Customer-spec. information  
 Customer : IVECO-FIAT

Engine : 221A

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder assembly : 1 688 901 019  
 Opening pressure, bar : 207...210  
 Orifice plate diameter mm : 0,8  
 Test lines : 1 680 750 067  
 Outside diameter x Wall thickness x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 2.00...2.10  
 : (1.95...2.15)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100  
 Rack travel in mm : 11.10...11.20  
 Del.quantity cm<sup>3</sup>/ : 17.0...17.2  
 100 s: (16.7...17.5)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)  
 2nd speed rpm : 225.0  
 Rack travel in mm : 7.5...7.7  
 Del.quantity cm<sup>3</sup>/ : 1.7...2.3  
 100 s: (1.4...2.6)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 600  
 Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Del.quantity : 170.0...172.0  
 1000 : (167.0...175.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 600  
 Rack travel in mm : 15.8

Testing:  
 1st rack travel in: 10.10  
 Speed rpm : 1145...1160  
 2nd rack travel in: 4.00  
 Speed rpm : 1195...1225  
 4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 225

Rack travel in mm : 6.0

Testing:

Speed rpm : 100

Minimum rack trave: 7.60

Speed rpm : 225

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 320...380

TORQUE CONTROL

Dimension a mm : -

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 11.10...11.20

2nd speed rpm : 600

Rack travel in m: 11.10...11.30

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10

Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 8,0 r
Edition : 14.02.1990
Replaces : -
Test oil : ISO-4113
Combination no. : 0 401 846 351
Injection pump
Pump designation : PE6P100A720RS332
Governor
Governor design. : RQV200...1200PA168R

Customer-spec. information
Customer : SCANIA

Engine : DS 8

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 35...45

Inlet press., bar : 1.5

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2.5...2.6
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300
Tolerance + - ° : 0.5 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 14.10

Del.quantity cm3/ : 13.4...13.8

100 s : (-)

Spread cm3 : 0.5

100 s : (-)

2nd speed rpm : 225
Rack travel in mm : 6.00
Del.quantity cm3/ : 1.0...1.2
100 s : (-)
Spread cm3 : 0.15
100 s : (-)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1200
Aneroid pressure h: 260
Del.quantity : 134.0...138.0
1000 : (-)

RATED SPEED

1st version
Control lever
position degrees: 62...70

Testing:
1st rack travel in: 16.30
Speed rpm : 1190...1210
2nd rack travel in: 10.95
Speed rpm : 1285...1315
3rd rack travel in: 1.40...8.10
Speed rpm : 1385...1415
4th rack travel in: 1550
Speed rpm : -

LOW IDLE 1
Control lever
position degrees: 6...14

Testing:
Speed rpm : 200
Minimum rack trave: 6.20
Speed rpm : 300
Rack travel in mm : 3.70...5.90
Rack travel in mm : 2.85
Speed rpm : 400
Speed rpm : 500
Maximum rack trave: 1.00

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500  
Pressure hPa : 260  
Rack travel mm : 13.90...14.10

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 12.00...12.20

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: ?  
Speed rpm : 1220

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 190...240  
1000 s: (-)

LOW IDLE

Speed rpm : 225  
Del.quantity cm<sup>3</sup>/ : 11.0...13.0  
1000 s: (-)

Remarks:  
: MACK ENDT 475

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,8 l 1  
 Edition : 21.04.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 413  
 Injection pump  
 Pump designation : PE6P110A72ORS371-1  
 EP type number : 0 411 816 166  
 Governor  
 Governor design. : RQV300...1100PA455R  
 Governor no. : 0 421 813 305

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM355A

1st version kW : 206.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.70...11.80

Del.quantity cm<sup>3</sup>/ : 16.0...16.2

100 s: (15.7...16.5)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

2nd speed rpm : 300.0  
 Rack travel in mm : 5.9...6.1  
 Del.quantity cm<sup>3</sup>/ : 1.4...2.0  
 100 s: (1.1...2.2)

Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1100  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Aneroid pressure h: 700  
 Del.quantity : 160.0...162.0  
 1000 : (157.0...165.0)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (8.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 62...70

Testing:  
 1st rack travel in: 10.70  
 Speed rpm : 1140...1150  
 2nd rack travel in: 4.00



Speed rpm : 1225...1255  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 11...19

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 300  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 470...530

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 11.70...11.80

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.00...11.10  
2nd pressure hPa : 390  
Rack travel in m: 11.50...11.60  
3rd pressure hPa : 350  
Rack travel in m: 11.20...11.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 156.0...160.0  
1000 s: (153.0...163.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (9.00)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 135.0...137.0  
1000 s: (132.0...140.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (9.00)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.70  
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (132.0...159.0)

Remarks:  
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,6 u1  
 Edition : 09.09.88  
 Replaces : 5.84  
 Test oil : ISO-4113

Combination no. : 0 401 846 461

Injection pump  
 Pump designation : PE6P110A72ORS441  
 EP type number : 0 411 816 148  
 Governor  
 Governor design. : RQ225/1200PA617  
 Governor no. : 0 421 801 157

Customer-spec. information

Customer : DAF

Engine : DHS825

1st version kw : 184.0  
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.20...12.30

Del.quantity cm<sup>3</sup>/ : 13.7...13.9

100 s : (13.4...14.1)

Spread cm<sup>3</sup> : 0.4

100 s : (0.7)

2nd speed rpm : 225.0

Rack travel in mm : 5.5...5.7

Del.quantity cm<sup>3</sup>/ : 1.0...1.5

100 s : (0.7...1.7)

Spread cm<sup>3</sup> : 0.4

100 s : (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 700

Del.quantity : 137.0...139.0

1000 : (134.5...141.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 15.8

Testing:

1st rack travel in: 11.20

Speed rpm : 1235...1250

2nd rack travel in: 4.00

Speed rpm : 1310...1340

4th rack travel in: 1450

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 225

Rack travel in mm : 5.6

Testing:

Speed rpm : 100

Minimum rack trave: 6.70

Speed rpm : 225

Rack travel in mm : 5.50...5.70

Rack travel in mm : 2.00

Speed rpm : 370...410

TORQUE CONTROL

Dimension a mm : -

Torque control curve - 1st version

1st speed rpm : 1000

Rack travel in m: 12.20...12.30

2nd speed rpm : 1190

Rack travel in m: 12.10...12.30

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 600

Pressure hPa : 700

Rack travel mm : 12.20...12.30

Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 10.10...10.20

2nd pressure hPa : 360

Rack travel in m: 11.70...11.80

3rd pressure hPa : 290

Rack travel in m: 10.60...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600

Del.quantity cm3/ : 92.0...94.0

1000 s: (89.5...96.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20

Speed rpm : 1235...1250

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 245.0...285.0

1000 s: (241.0...289.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 225

Rack travel in mm : 5.50...5.70

Del.quantity cm3/ : 10.0...15.0

1000 s: (7.5...17.5)

Spread cm3 : 4.50

1000 s: (7.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 8,3 o 1  
 Edition : 04.05.90  
 Replaces : 4.11.88  
 Test oil : ISO-4113

Combination no. : 0 401 846 471

Injection pump  
 Pump designation : PE6P100A72ORS447  
 EP type number : 0 411 806 191  
 Governor  
 Governor design. : RQ225/1200PA617  
 Govenrer no. : 0 421 801 157

Customer-spec. information  
 Customer : DAF

Engine : DHT 825

1st version kW : 162.0  
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.40...11.50

Del.quantity cm<sup>3</sup>/ : 11.8...12.0

100 s : (11.6...12.2)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 225.0

Rack travel in mm : 5.3...5.5

Del.quantity cm<sup>3</sup>/ : 1.0...1.4

100 s : (0.7...1.6)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 700

Del.quantity : 118.5...120.5

1000 : (116.5...122.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 16.0

Testing:

1st rack travel in: 10.40

Speed rpm : 1235...1250

2nd rack travel in: 4.00

Speed rpm : 1305...1335

4th rack travel in: 1450

Speed rpm : 0.00...1.00

LOW IDLE\*1

Setting point w/out bumper spring  
Speed rpm : 225  
Rack travel in mm : 5.4

Testing:

Speed rpm : 100  
Minimum rack trave: 6.00  
Speed rpm : 225  
Rack travel in mm : 5.30...5.50  
Rack travel in mm : 2.00  
Speed rpm : 365...405

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 11.60...11.70  
2nd speed rpm : 1200  
Rack travel in m: 11.30...11.50

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 11.40...11.50

Measurement

Speed 1/min : 600  
1st pressure hPa : -  
Rack travel in m: 10.40...10.50  
2nd pressure hPa : 315  
Rack travel in m: 11.10...11.20  
3rd pressure hPa : 270  
Rack travel in m: 10.50...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 93.5...95.5  
1000 s: (91.5...97.5)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 10.40  
Speed rpm : 1235...1250

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 210.0...230.0  
1000 s: (206.0...234.0)  
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 225  
Rack travel in mm : 5.30...5.50  
Del.quantity cm3/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

See VDT-I-420/115

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 11,9 h  
 Edition : 13.12.89  
 Replaces : 2.10.89  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 482  
 Injection pump  
 Pump designation : PE6P120A32ORS257  
 EP type number : 0 411 826 075  
 Governor  
 Governor design. : RQV250...1100PA680  
 Governor no. : 0 421 813 374

Customer-spec. information  
 Customer : ENASA

Engine : 96 T1 AX,BX

1st version kW : 228.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1080

Rack travel in mm : 10.00...10.10

Del.quantity cm<sup>3</sup>/ : 18.8...19.0

100 s: (18.5...19.3)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.4...5.6

Del.quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40

2nd speed rpm : 350  
 travel mm : 1.70...2.30

3rd speed rpm : 650  
 travel mm : 4.00...4.60

4th speed rpm : 1145  
 travel mm : 8.30...8.50

5th speed rpm : 1225  
 travel mm : 9.20...9.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1080

Aneroid pressure h: 900

Del.quantity : 188.0...190.0  
1000 : (185.0...193.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 103...111

Testing:  
1st rack travel in: 9.00  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1320  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 72...80

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.00  
Speed rpm : 250  
Rack travel in mm : 5.40...5.60

#### CONSTANT REGULATION

Speed rpm : 250...380

#### TORQUE CONTROL

Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 1080  
Rack travel in m: 10.00...10.10  
2nd speed rpm : 650  
Rack travel in m: 10.50...10.70  
3rd speed rpm : 850  
Rack travel in m: 10.20...10.40

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 10.10...10.30

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.70...9.10  
2nd pressure hPa : 370  
Rack travel in m: 9.80...9.90  
3rd pressure hPa : 290

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Rack travel in m: 9.20...9.40

#### START CUT-OUT

Speed 1/min : 170 (190)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 650  
Del.quantity cm3/ : 173.0...179.0  
1000 s: (170.0...182.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 128.0...130.0  
1000 s: (125.0...133.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 9.00  
Speed rpm : 1140...1150

#### INTERMEDIATE RATED SPEED

Rack travel in mm : 5.20  
Speed rpm : 600...0  
Rack travel in mm : 5.40  
Speed rpm : 600...0

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)  
Rack travel in mm : 19.50...21.00

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

#### APPLICATION

Special-purpose vehicle

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 9,8 b 4  
 Edition : 01.02.90  
 Replaces : 15.8.89  
 Test oil : ISO-4113

Combination no. : 0 401 846 497

Injection pump  
 Pump designation : PE6P120A32ORS438-1  
 EP type number : 0 411 826 133  
 Governor  
 Governor design. : RQV275...1200PA648-2  
 Governor no. : 0 421 813 490

Customer-spec. information

Customer : RVI

Engine : MIDS062030

1st version kW : 150.0  
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200

---

Rack travel in mm : 10.20...10.30

---

Del.quantity cm<sup>3</sup>/ : 13.3...13.5

---

100 s: (13.0...13.8)

---

Spread cm<sup>3</sup> : 0.5

---

100 s: (0.9)

2nd speed rpm : 275.0  
 Rack travel in mm : 6.4...6.6  
 Del.quantity cm<sup>3</sup>/ : 1.5...2.1  
 100 s: (1.2...2.4)

Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275  
 travel mm : 1.20...1.40  
 2nd speed rpm : 450  
 travel mm : 3.30...4.00  
 3rd speed rpm : 850  
 travel mm : 5.90...6.20  
 4th speed rpm : 1200  
 travel mm : 8.20...8.40

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1200  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1200  
 Del.quantity : 133.0...135.0  
 1000 : (130.0...138.0)



Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control Lever  
position degrees: 117...125

#### Testing:

1st rack travel in: 9.20  
Speed rpm : 1265...1275  
2nd rack travel in: 4.00  
Speed rpm : 1355...1385  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control Lever  
position degrees: 64...72

#### Testing:

Speed rpm : 200  
Minimum rack travel: 8.80  
Speed rpm : 275  
Rack travel in mm : 6.40...6.60

#### CONSTANT REGULATION

Speed rpm : 275...360

#### START CUT-OUT

Speed 1/min : 1295 (215)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 116.0...122.0  
1000 s: (113.0...125.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: -1.00  
Speed rpm : 1265...1275

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 105.0...125.0  
1000 s: (101.0...129.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 6.40...6.60  
Del.quantity cm<sup>3</sup>/ : 15.0...21.0  
1000 s: (12.0...24.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

:  
Start-of-delivery mark at the "INJ"  
marking

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 8,8 L  
 Edition : 01.02.90  
 Replaces : 15.8.89  
 Test oil : ISO-4113

Combination no. : 0 401 846 499

Injection pump  
 Pump designation : PE6P120A32ORS474  
 EP type number : 0 411 826 134  
 Governor  
 Governor design. : RQV275...1200PA425-3  
 Governor no. : 0 421 813 441

Customer-spec. information  
 Customer : RVI

Engine : MIDS062030

1st version kW : 168.0  
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200

---

Rack travel in mm : 11.90...12.00

---

Del. quantity cm<sup>3</sup>/ : 15.1...15.3

---

100 s: (14.8...15.6)

---

Spread cm<sup>3</sup> : 0.5

---

100 s: (0.9)

---

2nd speed rpm : 275.0  
 Rack travel in mm : 6.4...6.6  
 Del. quantity cm<sup>3</sup>/ : 1.5...2.1  
 100 s: (1.2...2.4)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275  
 travel mm : 1.20...1.40  
 2nd speed rpm : 400  
 travel mm : 2.90...3.40  
 3rd speed rpm : 900  
 travel mm : 5.80...6.00  
 4th speed rpm : 1200  
 travel mm : 7.80...8.00

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1250  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1200  
 Aneroid pressure h: 700  
 Del. quantity : 151.0...153.0  
 1000 : (148.0...156.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 118...126

#### Testing:

1st rack travel in: 10.90  
Speed rpm : 1285...1295  
2nd rack travel in: 4.00  
Speed rpm : 1400...1430  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 66...74

#### Testing:

Speed rpm : 200  
Minimum rack travel: 9.60  
Speed rpm : 275  
Rack travel in mm : 6.50...6.70

#### CONSTANT REGULATION

Speed rpm : 275...360

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.60...10.80  
2nd pressure hPa : 195  
Rack travel in m: 11.60...11.70  
3rd pressure hPa : 175  
Rack travel in m: 11.10...11.30

#### START CUT-OUT

Speed 1/min : 195 (215)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 750

Del.quantity cm<sup>3</sup>/ : 139.0...145.0  
1000 s: (136.0...148.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 92.0...94.0  
1000 s: (89.0...97.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: -1.00  
Speed rpm : 1285...1295

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 105.0...125.0  
1000 s: (101.0...129.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 6.40...6.60  
Del.quantity cm<sup>3</sup>/ : 15.0...21.0  
1000 s: (12.0...24.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

:  
Start-of-delivery mark at the "INU"  
marking

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 7,1 d  
 Edition : 16.02.90  
 Replaces : 9.11.89  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 505  
 Injection pump  
 Pump designation : PE6P110A32ORS483  
 EP type number : 0 411 816 159  
 Governor  
 Governor design. : RQV250...1200PA918  
 Governor no. : 0 421 813 772

Customer-spec. information  
 Customer : VOLVO

Engine : TD71F  
 1st version kW : 162.0  
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test lines : 1 680 750 015  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 3.00...3.10  
 : (2.95...3.15)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4  
 Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700  
 Rack travel in mm : 12.30...12.40  
 Del.quantity cm<sup>3</sup>/ : 12.7...12.9  
 100 s: (12.4...13.2)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)  
 2nd speed rpm : 250.0  
 Rack travel in mm : 5.3...5.5  
 Del.quantity cm<sup>3</sup>/ : 1.6...2.0  
 100 s: (1.3...2.3)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.6)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.10...1.30  
 2nd speed rpm : 380  
 travel mm : 2.30...2.60  
 3rd speed rpm : 500  
 travel mm : 2.90...3.30  
 4th speed rpm : 1260  
 travel mm : 7.70...7.90  
 5th speed rpm : 1400  
 travel mm : 9.00...9.30

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1330  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Aneroid pressure h: 900  
 Del.quantity : 127.0...129.0  
 1000 : (124.0...132.0)

Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 109...117

Testing:  
1st rack travel in: 11.30  
Speed rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed rpm : 1380...1410  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 56...64

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.80  
Speed rpm : 250  
Rack travel in mm : 5.30...5.50

#### CONSTANT REGULATION

Speed rpm : 250...450

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.30...12.40

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.20...10.30  
2nd pressure hPa : 570  
Rack travel in m: 12.10...12.20  
3rd pressure hPa : 270  
Rack travel in m: 10.40...10.60

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 85.0...88.0  
1000 s: (82.0...91.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.30  
Speed rpm : 1240...1250

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 170.0...200.0  
1000 s: (166.0...204.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.30...5.50  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.0...23.0)  
Spread cm<sup>3</sup> : 3.00  
1000 s: (6.00)

#### Remarks:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 7,1 d 1  
 Edition : 05.03.90  
 Replaces : 9.11.89  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 506  
 Injection pump  
 Pump designation : PE6P110A32ORS483-1  
 EP type number : 0 411 816 160  
 Governor  
 Governor design. : RQV250...1200PA918-1  
 Governor no. : 0 421 813 773

Customer-spec. information  
 Customer : VOLVO

Engine : TD71FS

1st version kW : 180.0  
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 3.00...3.10  
 : (2.95...3.15)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700  
 Rack travel in mm : 13.10...13.20  
 Del.quantity cm<sup>3</sup>/ : 14.2...14.4  
 100 s : (13.9...14.7)  
 Spread cm<sup>3</sup> : 0.4  
 100 s : (0.7)

2nd speed rpm : 250.0  
 Rack travel in mm : 5.3...5.5  
 Del.quantity cm<sup>3</sup>/ : 1.6...2.0  
 100 s : (1.3...2.3)  
 Spread cm<sup>3</sup> : 0.3  
 100 s : (0.6)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.10...1.30  
 2nd speed rpm : 380  
 travel mm : 2.30...2.60  
 3rd speed rpm : 500  
 travel mm : 2.90...3.30  
 4th speed rpm : 1260  
 travel mm : 7.70...7.90  
 5th speed rpm : 1400  
 travel mm : 9.00...9.30

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1330  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Aneroid pressure h: 1200  
 Del.quantity : 142.0...144.0  
 1000 : (139.0...147.0)

Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 109...117

Testing:  
1st rack travel in: 12.10  
Speed rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed rpm : 1385...1415  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 56...64

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.80  
Speed rpm : 250  
Rack travel in mm : 5.30...5.50

CONSTANT REGULATION  
Speed rpm : 250...450

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 13.10...13.20

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.20...10.30  
2nd pressure hPa : 710  
Rack travel in m: 12.20...12.30  
3rd pressure hPa : 380  
Rack travel in m: 10.40...10.60

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 1000  
Del.quantity cm<sup>3</sup>/ : 137.0...143.0  
1000 s: (135.0...145.0)  
Aneroid pressure h: -  
Speed rpm : 700

Del.quantity cm<sup>3</sup>/ : 85.0...88.0  
1000 s: (82.0...91.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.10  
Speed rpm : 1240...1250

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 170.0...200.0  
1000 s: (166.0...204.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.30...5.50  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.0...23.0)  
Spread cm<sup>3</sup> : 3.00  
1000 s: (6.00)

#### Remarks:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,6 x2  
 Edition : 16.02.90  
 Replaces : 10.4.87  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 540  
 Injection pump  
 Pump designation : PE6P110A32ORS407-1  
 EP type number : 0 411 816 147  
 Governor  
 Governor design. : RQ275/1000PA861  
 Governor no. : 0 421 801 397

Customer-spec. information  
 Customer : DAF

Engine : LT 195

1st version kW : 195.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test lines : 1 680 750 015  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 600  
 Rack travel in mm : 12.80...12.90  
 Del.quantity cm<sup>3</sup>/ : 15.3...15.5  
 100 s: (15.0...15.7)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)  
 2nd speed rpm : 275.0  
 Rack travel in mm : 7.2...7.4  
 Del.quantity cm<sup>3</sup>/ : 1.4...1.9  
 100 s: (1.1...2.1)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 600  
 Rack travel in mm : 15.40...16.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 600  
 Aneroid pressure h: 700  
 Del.quantity : 153.0...155.0  
 1000 : (150.5...157.5)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (7.50)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 600  
 Rack travel in mm : 16.0  
 Testing:  
 1st rack travel in: 11.40  
 Speed rpm : 1030...1045  
 2nd rack travel in: 4.00  
 Speed rpm : 1100...1130  
 4th rack travel in: 1300  
 Speed rpm : 0.00...1.00



LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 275

Rack travel in mm : 7.3

Testing:

Speed rpm : 100

Minimum rack trave: 8.40

Speed rpm : 275

Rack travel in mm : 7.20...7.40

Rack travel in mm : 2.50

Speed rpm : 340...380

TORQUE CONTROL

Dimension a mm : 0.25

Torque control curve - 1st version

1st speed rpm : 600

Rack travel in m: 13.00...13.10

2nd speed rpm : 980

Rack travel in m: 12.40...12.60

3rd speed rpm : 900

Rack travel in m: 12.50...12.80

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 600

Pressure hPa : 700

Rack travel mm : 12.80...12.90

Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 11.70...11.90

2nd pressure hPa : 340

Rack travel in m: 12.50...12.60

3rd pressure hPa : 310

Rack travel in m: 12.10...12.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed rpm : 980

Del.quantity cm3/ : 145.5...149.5

1000 s: (142.5...152.5)

Aneroid pressure h: -

Speed rpm : 600

Del.quantity cm3/ : 130.0...132.0

1000 s: (127.5...134.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.40

Speed rpm : 1030...1045

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 220.0...260.0

1000 s: (216.0...264.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 275

Rack travel in mm : 7.20...7.40

Del.quantity cm3/ : 14.0...19.0

1000 s: (11.5...21.5)

Spread cm3 : 4.50

1000 s: (7.50)

Remarks:

:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 10.1 a  
 Edition : 13.12.89  
 Replaces : 25.3.88  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 544  
 Injection pump  
 Pump designation : PE6P100A820LS130  
 EP type number : 0 411 806 179  
 Governor  
 Governor design. : RQ250/1050PA627-1  
 Governor no. : 0 421 801 407

Customer-spec. information  
 Customer : ENASA

Engine : 95 A1 BZ,

1st version kW : 125.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1030

Rack travel in mm : 11.80...11.90

Del.quantity cm<sup>3</sup>/ : 11.4...11.6

100 s: (11.2...11.8)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del.quantity cm<sup>3</sup>/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1030

Del.quantity : 114.0...116.0

1000 : (112.0...118.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.0

Testing:

1st rack travel in: 10.80

Speed rpm : 1095...1110

2nd rack travel in: 4.00

Speed rpm : 1140...1170

4th rack travel in: 1250

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 6.0

Testing:

Speed rpm : 100

Minimum rack trave: 7.50

Speed rpm : 250

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 350...390

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.80

Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 118.0...133.0

1000 s: (114.0...137.0)

LOW IDLE

Speed rpm : 250

Rack travel in mm : 5.90...6.10

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 10,1 b  
 Edition : 05.03.90  
 Replaces : 20.10.89  
 Test oil : ISO-4113

Combination no. : 0 401 846 546

Injection pump  
 Pump designation : PE6P100A820LS130  
 EP type number : 0 411 806 179  
 Governor  
 Governor design. : RQV250...1050PA807-1  
 Governor no. : 0 421 813 665

Customer-spec. information  
 Customer : ENASA

Engine : 95 A1 BX,

1st version kW : 125.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1030

Rack travel in mm : 11.70...11.80

Del.quantity cm<sup>3</sup>/ : 11.4...11.6

100 s: (11.2...11.8)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del.quantity cm<sup>3</sup>/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40

2nd speed rpm : 350  
 travel mm : 1.90...2.50

3rd speed rpm : 700  
 travel mm : 4.50...5.10

4th speed rpm : 1095  
 travel mm : 8.00...8.20

5th speed rpm : 1185  
 travel mm : 9.00...9.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1110

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1030

Del.quantity : 114.0...116.0

1000 : (112.0...118.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version  
Control lever  
position degrees: 115...123

Testing:

1st rack travel in: 10.70  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 80...88

Testing:

Speed rpm : 100  
Minimum rack trave: 7.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

Speed rpm : 250...400

START CUT-OUT

Speed 1/min : 170 (190)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.70  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 260.0...280.0  
1000 s: (256.0...284.0)  
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 10,1 c  
 Edition : 13.12.89  
 Replaces : 20.10.89  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 547  
 Injection pump  
 Pump designation : PE6P110A820LS513  
 EP type number : 0 411 816 174  
 Governor  
 Governor design. : RQV250...1000PA811  
 Governor no. : 0 421 813 556

Customer-spec. information  
 Customer : ENASA

Engine : 95 R1 AX

1st version kW : 184.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 Q15

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 980

Rack travel in mm : 12.80...12.90

Del.quantity cm<sup>3</sup>/ : 17.6...17.8

100 s: (17.3...18.1)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 6.6...6.8

Del.quantity cm<sup>3</sup>/ : 1.8...2.3

100 s: (1.5...2.5)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40

2nd speed rpm : 400  
 travel mm : 2.20...2.80

3rd speed rpm : 650  
 travel mm : 4.50...5.10

4th speed rpm : 1050  
 travel mm : 8.50...8.70

5th speed rpm : 1140  
 travel mm : 9.70...10.10

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1040

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 980

Aneroid pressure h: 900

Del.quantity : 176.0...178.0

1000 : (173.0...181.0)

Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 117...125

Testing:  
1st rack travel in: 11.80  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 81...89

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.20  
Speed rpm : 250  
Rack travel in mm : 6.60...6.80

#### CONSTANT REGULATION

Speed rpm : 250...480

#### TORQUE CONTROL

Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 980  
Rack travel in m: 12.80...12.90  
2nd speed rpm : 700  
Rack travel in m: 13.30...13.50  
3rd speed rpm : 850  
Rack travel in m: 13.00...13.20

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.00...13.20

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.80...11.20  
2nd pressure hPa : 440  
Rack travel in m: 12.50...12.60  
3rd pressure hPa : 290  
Rack travel in m: 11.50...11.70

#### START CUT-OUT

Speed 1/min : 170 (190)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 178.0...182.0  
1000 s: (175.0...185.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 132.0...134.0  
1000 s: (129.0...137.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 11.80  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (146.0...174.0)

#### Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 10,1 d  
 Edition : 13.12.89  
 Replaces : 20.10.89  
 Test oil : ISO-4113

Combination no. : 0 401 846 549

Injection pump  
 Pump designation : PE6P100A820LS503  
 EP type number : 0 411 806 197  
 Governor  
 Governor design. : RQV250...1000PA811  
 Governor no. : 0 421 813 556

Cust. part no. : 181333

Customer-spec. information  
 Customer : ENASA

Engine : 95 T1 AX,BX

1st version kW : 165.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 980

Rack travel in mm : 14.20...14.30

Del. quantity cm<sup>3</sup>/ : 16.5...16.7

100 s: (16.3...16.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.7...7.9

Del. quantity cm<sup>3</sup>/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40

2nd speed rpm : 400  
 travel mm : 2.20...2.80

3rd speed rpm : 650  
 travel mm : 4.50...5.10

4th speed rpm : 1050  
 travel mm : 8.50...8.70

5th speed rpm : 1140  
 travel mm : 9.70...10.10

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1040

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 980

Aneroid pressure h: 900



Del.quantity : 165.0...167.0  
1000 : (163.0...169.0)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 121...129

#### Testing:

1st rack travel in: 13.20  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1140...1170  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 81...89

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10

#### CONSTANT REGULATION

Speed rpm : 250...450

#### TORQUE CONTROL

Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 980  
Rack travel in m: 14.20...14.30  
2nd speed rpm : 550  
Rack travel in m: 15.00...15.30  
3rd speed rpm : 750  
Rack travel in m: 14.80...15.00  
4th speed rpm : 850  
Rack travel in m: 14.40...14.60

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 14.70...14.90

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 12.90...13.30  
2nd pressure hPa : 400

Rack travel in m: 14.10...14.20  
3rd pressure hPa : 300  
Rack travel in m: 13.40...13.60

#### START CUT-OUT

Speed 1/min : 170 (190)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 170.0...174.0  
1000 s: (168.0...176.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 130.0...132.0  
1000 s: (127.0...135.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 13.20  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 180.0...200.0  
1000 s: (176.0...204.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

#### Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 11,9 f  
 Edition : 13.12.89  
 Replaces : 19.5.88  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 551  
 Injection pump  
 Pump designation : PE6P110A320RS263-1  
 EP type number : 0 411 816 175  
 Governor  
 Governor design. : RQ250/1000PA218-2  
 Governor no. : 0 421 801 411

Customer-spec. information  
 Customer : ENASA

Engine : 96 T4 AY

1st version kW : 176.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 11.40...11.50

Del.quantity cm<sup>3</sup>/ : 16.0...16.2

100 s: (15.7...16.5)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 5.9...6.1

Del.quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 160.0...162.0

1000 : (157.0...165.0)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.0

Testing:

1st rack travel in: 10.40

Speed rpm : 1045...1060

2nd rack travel in: 4.00

Speed rpm : 1110...1140

4th rack travel in: 1200

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 6.0

Testing:

Speed rpm : 100

Minimum rack travel: 7.50

Speed rpm : 250

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 350...390

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.40

Speed rpm : 1045...1060

STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm<sup>3</sup>/ : 143.0...163.0

1000 s: (139.0...167.0)

Remarks:

:

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 10,1 e  
 Edition : 13.12.89  
 Replaces : 2.10.89  
 Test oil : ISO-4113

Combination no. : 0 401 846 552

Injection pump  
 Pump designation : PE6P100A820LS503-1  
 EP type number : 0 411 806 198  
 Governor  
 Governor design. : RQ250/1000PA352-1  
 Governor no. : 0 421 801 412

Customer-spec. information  
 Customer : ENASA

Engine : 95 TEDY

1st version kW : 155.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.85...2.95)  
 Rack travel in mm : 9.00...12.00

H01

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 980

---

Rack travel in mm : 13.70...13.80

---

Del.quantity cm<sup>3</sup>/ : 15.5...15.7

---

100 s: (15.3...15.9)

---

Spread cm<sup>3</sup> : 0.3

---

100 s: (0.6)

2nd speed rpm : 250.0  
 Rack travel in mm : 7.8...8.0  
 Del.quantity cm<sup>3</sup>/ : 1.8...2.2  
 100 s: (1.5...2.4)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 600  
 Rack travel in mm : 16.00...17.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 980  
 Aneroid pressure h: 900  
 Del.quantity : 155.0...157.0  
 1000 : (153.0...159.0)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 600  
 Rack travel in mm : 16.6

Testing:  
 1st rack travel in: 12.70  
 Speed rpm : 1045...1060  
 2nd rack travel in: 4.00  
 Speed rpm : 1100...1130

4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6.0

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 350...390

#### TORQUE CONTROL

Dimension a mm : 0.40  
Torque control curve - 1st version  
1st speed rpm : 980  
Rack travel in m: 13.70...13.80  
2nd speed rpm : 700  
Rack travel in m: 14.40...14.80  
3rd speed rpm : 825  
Rack travel in m: 13.90...14.30

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 14.10...14.30

#### Measurement

Speed 1/min : 500  
1st pressure hPa : -  
Rack travel in m: 12.90...13.30  
2nd pressure hPa : 400  
Rack travel in m: 14.10...14.20  
3rd pressure hPa : 300  
Rack travel in m: 13.40...13.60

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 159.0...163.0  
1000 s: (157.0...165.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 130.0...132.0  
1000 s: (127.0...135.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.70  
Speed rpm : 1045...1060

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (146.0...174.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 9,8 h  
 Edition : 05.03.90  
 Replaces : 1.12.89  
 Test oil : ISO-4113

Combination no. : 0 401 846 561

Injection pump  
 Pump designation : PE6P120A320RS519  
 EP type number : 0 411 826 145  
 Governor  
 Governor design. : RQ275/1050PA899  
 Governor no. : 0 421 801 460

Customer-spec. information  
 Customer : RVI

Engine : MIHS 06.20.45

1st version kW : 185.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

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Rack travel in mm : 11.10...11.20

---

Del. quantity cm<sup>3</sup>/ : 16.7...16.9

---

100 s: (16.4...17.2)

---

Spread cm<sup>3</sup> : 0.5

---

100 s: (0.9)

2nd speed rpm : 275.0  
 Rack travel in mm : 5.6...6.0  
 Del. quantity cm<sup>3</sup>/ : 1.3...1.9  
 100 s: (1.0...2.2)

Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2

Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1050  
 Aneroid pressure h: 700  
 Del. quantity : 167.0...169.0  
 1000 : (164.0...172.0)

Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 600  
 Rack travel in mm : 20.0

Testing:  
 1st rack travel in: 10.10

Speed rpm : 1110...1125  
2nd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 5.8

#### Testing:

Speed rpm : 200  
Minimum rack travel: 7.40  
Speed rpm : 275  
Rack travel in mm : 5.70...5.90  
Rack travel in mm : 2.10  
Speed rpm : 345...385

#### Aneroid/Altitude Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 11.10...11.20

##### Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.70...9.90

2nd pressure hPa : 260

Rack travel in m: 10.60...10.70

3rd pressure hPa : 220

Rack travel in m: 10.00...10.20

#### START CUT-OUT

Speed 1/min : 195 (215)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700

Speed rpm : 700

Del.quantity cm<sup>3</sup>/ : 159.0...165.0

1000 s: (156.0...168.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 105.0...107.0

1000 s: (102.0...110.0)

#### BREAKAWAY

#### 1st version

H04

1mm rack travel less than

full load rack tr: -1.00

Speed rpm : 1110...1125

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 145.0...175.0

1000 s: (141.0...179.0)

#### LOW IDLE

Speed rpm : 275

Rack travel in mm : 5.60...6.00

Del.quantity cm<sup>3</sup>/ : 13.0...19.0

1000 s: (10.0...22.0)

Spread cm<sup>3</sup> : 8.00

1000 s: (12.00)

Remarks:

:

#### APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 11,9 a3  
 Edition : 23.03.90  
 Replaces : 13.10.89  
 Test oil : ISO-4113

Combination no. : 0 401 846 563

Injection pump  
 Pump designation : PE6P120A320RS257  
 EP type number : 0 411 826 075  
 Governor  
 Governor design. : RQV250...1050PA808-3  
 Governor no. : 0 421 813 812

Customer-spec. information  
 Customer : ENASA

Engine : 96 T3 CX

1st version kW : 228.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 650

---

Rack travel in mm : 10.40...10.50

---

Del. quantity cm<sup>3</sup>/ : 17.9...18.1  
 100 s: (17.6...18.4)

---

Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

---

2nd speed rpm : 250.0  
 Rack travel in mm : 5.6...5.8  
 Del. quantity cm<sup>3</sup>/ : 1.7...2.3  
 100 s: (1.4...2.6)

---

Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40  
 2nd speed rpm : 350  
 travel mm : 1.90...2.50  
 3rd speed rpm : 700  
 travel mm : 4.50...5.10  
 4th speed rpm : 1095  
 travel mm : 8.00...8.20  
 5th speed rpm : 1185  
 travel mm : 9.00...9.40

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1110  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 650  
 Aneroid pressure h: 900



Del.quantity : 179.0...181.0  
1000 : (176.0...184.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 114...122

Testing:  
1st rack travel in: 9.40  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 78...86

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.20  
Speed rpm : 250  
Rack travel in mm : 5.60...5.80

#### CONSTANT REGULATION

Speed rpm : 250...450

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 10.40...10.50

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 7.60...8.00  
2nd pressure hPa : 650  
Rack travel in m: 10.00...10.10  
3rd pressure hPa : 380  
Rack travel in m: 8.40...8.60

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 1030  
Del.quantity cm3/ : 191.0...197.0  
1000 s: (188.0...200.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 104.0...106.0  
1000 s: (101.0...109.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.40  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)  
Rack travel in mm : 19.50...21.00

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

#### APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 11,9 a4  
 Edition : 30.03.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 563A  
 Injection pump  
 Pump designation : PE6P120A32ORS257  
 EP type number : 0 411 826 075  
 Governor  
 Governor design. : RQV250...1050PA808-3  
 Governor no. : 0 421 813 812

Customer-spec. information  
 Customer : ENASA

Engine : 96 T1 DW,EW

1st version kW : 206.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 10.60...10.70

Del.quantity cm<sup>3</sup>/ : 17.7...17.9

100 s: (17.4...18.2)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 5.6...5.8  
 Del.quantity cm<sup>3</sup>/ : 1.7...2.3  
 100 s: (1.4...2.6)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40  
 2nd speed rpm : 350  
 travel mm : 1.90...2.50  
 3rd speed rpm : 700  
 travel mm : 4.50...5.10  
 4th speed rpm : 1095  
 travel mm : 8.00...8.20  
 5th speed rpm : 1185  
 travel mm : 9.00...9.40

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1110  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 600  
 Aneroid pressure h: 900

Del.quantity : 177.0...179.0  
1000 : (174.0...182.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 117...125

Testing:  
1st rack travel in: 9.60  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1330  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 78...86

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.20  
Speed rpm : 250  
Rack travel in mm : 5.60...5.80

CONSTANT REGULATION  
Speed rpm : 250...450

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 10.60...10.70

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.30...8.70  
2nd pressure hPa : 400  
Rack travel in m: 10.10...10.20  
3rd pressure hPa : 230  
Rack travel in m: 9.10...9.30

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 1080  
Del.quantity cm<sup>3</sup>/ : 197.0...203.0  
1000 s: (194.0...206.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 119.0...121.0  
1000 s: (116.0...124.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.60  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)  
Rack travel in mm : 19.50...21.00

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

#### APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 11,9 a5  
 Edition : 30.03.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 563E  
 Injection pump  
 Pump designation : PE6P120A320RS257  
 EP type number : 0 411 826 075  
 Governor  
 Governor design. : RQV250...1050PA808-3  
 Governor no. : 0 421 813 812

Customer-spec. information  
 Customer : ENASA

Engine : 96 T1 CV

1st version kW : 228.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder assembly : 1 688 901 019

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 10.40...10.50

Del. quantity cm<sup>3</sup>/ : 17.9...18.1

100 s: (17.6...18.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.6...5.8

Del. quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40

2nd speed rpm : 350  
 travel mm : 1.90...2.50

3rd speed rpm : 700  
 travel mm : 4.50...5.10

4th speed rpm : 1095  
 travel mm : 8.00...8.20

5th speed rpm : 1185  
 travel mm : 9.00...9.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1110

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650

Aneroid pressure h: 900

Del.quantity : 179.0...181.0  
1000 : (176.0...184.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

RATED SPEED

1st version  
Control lever  
position degrees: 114...122

Testing:  
1st rack travel in: 9.40  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control Lever  
position degrees: 78...86

Testing:  
Speed rpm : 100  
Minimum rack trave: 7.20  
Speed rpm : 250  
Rack travel in mm : 5.60...5.80

CONSTANT REGULATION  
Speed rpm : 250...450

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 10.40...10.50

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 7.60...8.00  
2nd pressure hPa : 650  
Rack travel in m: 10.00...10.10  
3rd pressure hPa : 380  
Rack travel in m: 8.40...8.60

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 1030  
Del.quantity cm<sup>3</sup>/ : 191.0...197.0  
1000 s: (188.0...200.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 104.0...106.0  
1000 s: (101.0...109.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.40  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)  
Rack travel in mm : 19.50...21.00

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 10,1 d  
 Edition : 30.03.90  
 Replaces : 20.10.89  
 Test oil : ISO-4113

Combination no. : 0 401 846 565

Injection pump  
 Pump designation : PE6P110A820LS513  
 EP type number : 0 411 816 174  
 Governor  
 Governor design. : RQ250/1000PA352-1  
 Governor no. : 0 421 801 412

Customer-spec. information

Customer : ENASA

Engine : 95 R3AZ,R1AZ

1st version kw : 184.0

Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.10...13.20

Del.quantity cm<sup>3</sup>/ : 17.9...18.1

100 s: (17.6...18.4)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 6.6...6.8

Del.quantity cm<sup>3</sup>/ : 1.8...2.3

100 s: (1.5...2.5)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 16.00...17.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 900

Del.quantity : 179.0...181.0

1000 : (176.0...184.0)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.6

Testing:

1st rack travel in: 11.80

Speed rpm : 1045...1060

2nd rack travel in: 4.00

Speed rpm : 1095...1125

4th rack travel in: 1200  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6.0

Testing:  
Speed rpm : 100  
Minimum rack trave: 7.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 350...390

TORQUE CONTROL  
Dimension a mm : 0.40  
Torque control curve - 1st version  
1st speed rpm : 700  
Rack travel in m: 13.30...13.70  
2nd speed rpm : 900  
Rack travel in m: 12.80...13.00

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.10...13.20

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.80...11.20  
2nd pressure hPa : 450  
Rack travel in m: 12.60...12.70  
3rd pressure hPa : 300  
Rack travel in m: 11.50...11.70

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 900  
Del.quantity cm3/ : 175.0...179.0  
1000 s: (173.0...181.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.80  
Speed rpm : 1045...1060

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 150.0...170.0  
1000 s: (146.0...174.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : SCA 11,0r12  
 Edition : 16.02.90  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 401 846 734

Injection pump  
 Pump designation : PE6P110A72ORS3040  
 EP type number : 0 411 816 713  
 Governor  
 Governor design. : RQV200...1000PA555  
 Governor no. : 0 421 813 280

Customer-spec. information  
 Customer : SCANIA

Engine : DS11 14

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.30...3.40  
 : (3.25...3.45)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.60...13.70

Del.quantity cm<sup>3</sup>/ : 17.5...17.7

100 s: (17.3...17.9)

Spread cm<sup>3</sup> : 0.6

100 s: (0.8)

2nd speed rpm : 225.0

Rack travel in mm : 4.4...4.6

Del.quantity cm<sup>3</sup>/ : 1.7...2.1

100 s: (-)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1050

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 600

Aneroid pressure h: 700

Del.quantity : 175.0...177.0

1000 : (173.0...179.0)

Spread cm<sup>3</sup> : 6.00

1000 : (8.00)

## RATED SPEED

### 1st version

Control lever

position degrees: 56...64

### Testing:

1st rack travel in: 12.60

Speed rpm : 1040...1050

2nd rack travel in: 4.00

Speed rpm : 1150...1180

4th rack travel in: 1300

Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever



position degrees: 5...13

Testing:

Speed rpm : 100  
Minimum rack travel: 5.90  
Speed rpm : 225  
Rack travel in mm : 4.40...4.60  
Rack travel in mm : 2.00  
Speed rpm : 320...380

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 13.60...13.70

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.60...11.80  
2nd pressure hPa : 410  
Rack travel in m: 13.20...13.30  
3rd pressure hPa : 260  
Rack travel in m: 12.20...12.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700  
Speed rpm : 1000  
Del.quantity cm3/ : 175.0...180.0  
1000 s: (172.5...182.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 127.0...131.0  
1000 s: (125.0...133.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.60  
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 240.0...290.0  
Rack travel in mm : 20.00...21.00

LOW IDLE

H14

Speed rpm : 225  
Rack travel in mm : 4.40...4.60  
Del.quantity cm3/ : 17.0...21.0  
Spread cm3 : 2.00  
1000 s: (4.00)

Remarks:

ADDITIONAL INFORMATION

Check and set without ROBO diaphragm

For comb. with letter index see  
VDT-I-400/116.

For sealing see VDT-I-400/117.

Scania test specifications taken over  
on Aug. 30, 1984

Start of delivery - engine: 20° before  
TDC

Firing sequence of engine:  
1-5-3-6-2-4.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,0 e 5  
 Edition : 05.03.90  
 Replaces : 12.12.89  
 Test oil : ISO-4113

Combination no. : 0 401 846 818

Injection pump  
 Pump designation : PE6P120A320LS3810-10  
 EP type number : 0 411 826 734  
 Governor  
 Governor design. : RQV350...1150PA720-1  
 Governor no. : 0 421 813 539

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM421A

1st version kW : 184.0  
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-45-120-165-240-285

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 10.70...10.80

Del. quantity cm<sup>3</sup>/ : 15.8...16.0

100 s: (15.5...16.3)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 4.9...5.1

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1250

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 700

Del. quantity : 158.0...160.0

1000 : (155.0...163.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 112...120

Testing:

1st rack travel in: 9.70  
Speed rpm : 1175...1185  
2nd rack travel in: 4.00  
Speed rpm : 1260...1290  
4th rack travel in: 1360  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 62...70

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.70  
Speed rpm : 350  
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION  
Speed rpm : 350...500

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 10.70...10.80  
2nd speed rpm : 850  
Rack travel in m: 11.00...11.20  
3rd speed rpm : 950  
Rack travel in m: 10.80...11.00

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.30...10.60

Measurement  
Speed 1/min : 500

1st pressure hPa : 425  
Rack travel in m: 10.50...10.60

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 165.0...171.0  
1000 s: (162.0...174.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 700

Speed rpm : 1150  
Del.quantity cm<sup>3</sup>/ : 128.0...131.0 \*  
1000 s: (125.0...134.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 141.0...143.0  
1000 s: (138.0...146.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.70  
Speed rpm : 1175...1185

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (146.0...174.0)

Remarks:

:

\* = Set at reduced-delivery stop.

Adjust stop lever to 0.5...1.0 mm  
before stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,0 e12  
 Edition : 30.03.90  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 401 846 818

Injection pump  
 Pump designation : PE6P120A320LS3810-10  
 EP type number : 0 411 826 734  
 Governor  
 Governor design. : RQV350...1150PA720-2  
 Governor no. : 0 421 813 620

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM421A

1st version kW : 184.0  
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-45-120-165-240-285

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 10.70...10.80

Del.quantity cm<sup>3</sup>/ : 15.8...16.0

100 s: (15.5...16.3)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 4.9...5.1

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1250

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 700

Del.quantity : 158.0...160.0

1000 : (155.0...163.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 112...120

Testing:

1st rack travel in: 9.70  
Speed rpm : 1175...1185  
2nd rack travel in: 4.00  
Speed rpm : 1260...1290  
4th rack travel in: 1360  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 62...70

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.70  
Speed rpm : 350  
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION  
Speed rpm : 350...500

TORQUE CONTROL  
Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 10.70...10.80  
2nd speed rpm : 850  
Rack travel in m: 11.00...11.20  
3rd speed rpm : 950  
Rack travel in m: 10.80...11.00

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.30...10.40

Measurement  
Speed 1/min : 500

1st pressure hPa : 425  
Rack travel in m: 10.50...10.60

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 165.0...171.0  
1000 s: (162.0...174.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

Aneroid pressure h: 700  
Speed rpm : 1150  
Del.quantity cm<sup>3</sup>/ : 128.0...131.0 \*  
1000 s: (125.0...134.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 141.0...143.0  
1000 s: (138.0...146.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.70  
Speed rpm : 1175...1185

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (146.0...174.0)

Remarks:

\* = Set at reduced-delivery stop.

Adjust stop lever to 0.5...1.0 mm  
before stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 11,9 d  
 Edition : 05.03.90  
 Replaces : 13.12.89  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 862  
 Injection pump  
 Pump designation : PE6P110A320RS3201  
 EP type number : 0 411 816 753  
 Governor  
 Governor design. : RQ250/1050PA218-1  
 Governor no. : 0 421 801 406

Customer-spec. information  
 Customer : ENASA

Engine : 96 A4 AU

1st version kW : 150.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
 : (3.15...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1030

Rack travel in mm : 12.10...12.20

Del.quantity cm<sup>3</sup>/ : 12.6...12.8

100 s: (12.3...13.1)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del.quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1030

Del.quantity : 126.0...128.0

1000 : (123.0...131.0)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.0

Testing:

1st rack travel in: 11.10

Speed rpm : 1095...1110

2nd rack travel in: 4.00

Speed rpm : 1140...1170

4th rack travel in: 1250

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 6.0

Testing:

Speed rpm : 100

Minimum rack trave: 7.50

Speed rpm : 250

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 290...330

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.10

Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 143.0...163.0

1000 s: (139.0...167.0)

LOW IDLE

Speed rpm : 250

Rack travel in mm : 5.90...6.10

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 10,0 w  
 Edition : 16.02.90  
 Replaces : 24.6.88  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 869  
 Injection pump  
 Pump designation : PE6P120A320RS3118  
 EP type number : 0 411 826 726  
 Governor  
 Governor design. : RQV250...1100PA649-1  
 Governor no. : 0 421 813 675

Customer-spec. information  
 Customer : VOLVO

Engine : THD 102 KD

1st version kW : 250.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70  
 : (2.55...2.75)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.70...12.80

Del.quantity cm<sup>3</sup>/ : 22.2...22.4

100 s: (21.9...22.7)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.3...4.5

Del.quantity cm<sup>3</sup>/ : 2.7...3.3

100 s: (2.4...3.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.7)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.10...1.30

2nd speed rpm : 500

travel mm : 4.10...4.90

3rd speed rpm : 700

travel mm : 6.30...6.70

4th speed rpm : 950

travel mm : 6.30...6.70

5th speed rpm : 1100

travel mm : 7.00...7.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1175

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200



Del.quantity : 222.0...224.0  
1000 : (219.0...227.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 112...120

#### Testing:

1st rack travel in: 11.70  
Speed rpm : 1130...1140  
2nd rack travel in: 4.00  
Speed rpm : 1210...1240  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 63...71

#### Testing:

Speed rpm : 100  
Minimum rack travel: 5.90  
Speed rpm : 250  
Rack travel in mm : 4.30...4.50

#### CONSTANT REGULATION

Speed rpm : 250...420

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 12.70...12.80

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.30...8.50  
2nd pressure hPa : 700  
Rack travel in m: 12.50...12.60  
3rd pressure hPa : 120  
Rack travel in m: 9.00...9.40

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 131.0...133.0  
1000 s: (128.0...136.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.70  
Speed rpm : 1130...1140

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 230.0...270.0  
1000 s: (225.0...275.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.30...4.50  
Del.quantity cm<sup>3</sup>/ : 27.0...33.0  
1000 s: (24.0...36.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

#### APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI 13,8 c1  
 Edition : 12.04.90  
 Replaces : 29.3.89  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 879  
 Injection pump  
 Pump designation : PE6P120A72ORS3192  
 EP type number : 0 411 826 761  
 Governor  
 Governor design. : RQV300...900PA857-1  
 Governor no. : 0 421 813 683

Customer-spec. information  
 Customer : IVECO-UNIC

Engine : 8210.42.101

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve  
 : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 067  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 3.40...3.50  
 : (3.35...3.55)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900  
 Rack travel in mm : 13.10...13.20  
 Del.quantity cm<sup>3</sup>/ : 23.9...24.1  
 100 s: (23.6...24.4)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)  
 2nd speed rpm : 300.0  
 Rack travel in mm : 4.9...5.1  
 Del.quantity cm<sup>3</sup>/ : 1.8...2.4  
 100 s: (1.5...2.7)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 0.70...0.90  
 2nd speed rpm : 550  
 travel mm : 4.00...4.60  
 3rd speed rpm : 800  
 travel mm : 6.60...6.90  
 4th speed rpm : 900  
 travel mm : 7.70...7.90

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 950  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 900  
 Aneroid pressure h: 900  
 Del.quantity : 239.0...241.0  
 1000 : (236.0...244.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 112...120

Testing:

1st rack travel in: 12.10  
Speed rpm : 940...950  
2nd rack travel in: 4.00  
Speed rpm : 1060...1090  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 59...67

Testing:

Speed rpm : 100  
Minimum rack travel: 6.50  
Speed rpm : 300  
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

Speed rpm : 370...490

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.20...13.30

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.10...9.30

2nd pressure hPa : 520

Rack travel in m: 12.20...12.30

3rd pressure hPa : 330

Rack travel in m: 9.80...10.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 232.0...238.0  
1000 s: (229.0...241.0)

Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 108.0...110.0  
1000 s: (105.0...113.0)

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.10  
Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 235.0...265.0  
1000 s: (231.0...269.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.90...5.10  
Del.quantity cm<sup>3</sup>/ : 18.0...24.0  
1000 s: (15.0...27.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN 12,2 a1
Edition : 15.03.90
Replaces : -
Test oil : ISO-4113
Combination no. : 0 401 846 882A
Injection pump
Pump designation : PE6P120A320RS3206-1
EP type number : 0 411 826 775
Governor
Governor design. : RQ750PA783-1
Governor no. : 0 421 801 432

Customer-spec. information
Customer : PENTA

Engine : TAMD 122

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 29.7...29.9

100 s: (29.4...30.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.1...5.3

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.4

100 s: (0.7)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 297.0...299.0

1000 : (294.0...302.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 11.40

Speed rpm : 896...901

2nd rack travel in: 4.00

Speed rpm : 933...948

4th rack travel in: 1000

Speed rpm : 0.00...1.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.40

Speed rpm : 896...901

INTERMEDIATE RATED SPEED  
Rack travel in mm : 4.00

Remarks: :

APPLICATION  
Generator set



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN 12,2 a2  
 Edition : 15.03.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 882B  
 Injection pump  
 Pump designation : PE6P120A32ORS3206-1  
 EP type number : 0 411 826 775  
 Governor  
 Governor design. : RQ750PA783-1  
 Governor no. : 0 421 801 432

Customer-spec. information  
 Customer : PENTA

Engine : TMD 122 A

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 067  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00

H27

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700  
 Rack travel in mm : 10.70...10.80  
 Del.quantity cm<sup>3</sup>/ : 24.3...24.5  
 100 s: (24.0...24.8)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)  
 2nd speed rpm : 300.0  
 Rack travel in mm : 5.1...5.3  
 Del.quantity cm<sup>3</sup>/ : 1.7...2.3  
 100 s: (1.4...2.6)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Del.quantity : 243.0...245.0  
 1000 : (240.0...248.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Testing:  
 1st rack travel in: 9.70  
 Speed rpm : 747...752  
 2nd rack travel in: 4.00  
 Speed rpm : 777...792  
 4th rack travel in: 850  
 Speed rpm : 0.00...1.00

BREAKAWAY

1st version  
 1mm rack travel less than  
 full load rack tr: 9.70  
 Speed rpm : 747...752

INTERMEDIATE RATED SPEED  
Rack travel in mm : 4.00

Remarks:

:

APPLICATION

Generator set

4

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN 12,2 a3  
 Edition : 15.03.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 882C  
 Injection pump  
 Pump designation : PE6P120A32ORS3206-1  
 EP type number : 0 411 826 775  
 Governor  
 Governor design. : RQ750PA783-1  
 Governor no. : 0 421 801 432

Customer-spec. information  
 Customer : PENTA

Engine : TMD 122

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700  
 Rack travel in mm : 10.70...10.80  
 Del. quantity cm<sup>3</sup>/ : 24.3...24.5  
 100 s: (24.0...24.8)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 5.1...5.3  
 Del. quantity cm<sup>3</sup>/ : 1.7...2.3  
 100 s: (1.4...2.6)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Del. quantity : 243.0...245.0  
 1000 : (240.0...248.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Testing:  
 1st rack travel in: 9.70  
 Speed rpm : 897...902  
 2nd rack travel in: 4.00  
 Speed rpm : 933...948  
 4th rack travel in: 1000  
 Speed rpm : 0.00...1.00

BREAKAWAY

1st version  
 1mm rack travel less than  
 full load rack tr: 9.70  
 Speed rpm : 897...902



INTERMEDIATE RATED SPEED  
Rack travel in mm : 4.00

Remarks: :

APPLICATION  
Generator set



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 9,3 a  
 Edition : 29.03.89  
 Replaces : 22.12.88  
 Test oil : ISO-4113

Combination no. : 0 401 846 893

Injection pump  
 Pump designation : PE6P110A72ORS3220  
 EP type number : 0 411 816 760  
 Governor  
 Governor design. : RGV250...1000PA904  
 Governor no. : 0 421 813 722

Customer-spec. information  
 Customer : RVI

Engine : BS 16 A

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70  
 : (3.55...3.75)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.20...13.30

Del.quantity cm<sup>3</sup>/ : 12.9...13.2

100 s: (12.6...13.4)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 8.4...8.6

Del.quantity cm<sup>3</sup>/ : 1.8...2.3

100 s: (1.5...2.5)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40

2nd speed rpm : 750  
 travel mm : 5.20...5.80

3rd speed rpm : 1000  
 travel mm : 7.40...7.60

4th speed rpm : 1350  
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1080

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 900

Del.quantity : 129.0...132.0

1000 : (126.5...134.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever  
position degrees: 118...126

Testing:  
1st rack travel in: 12.20  
Speed rpm : 1080...1090  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 68...76

Testing:  
Speed rpm : 100  
Minimum rack travel: 10.00  
Speed rpm : 250  
Rack travel in mm : 8.40...8.60

CONSTANT REGULATION  
Speed rpm : 355...465

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.20...13.30

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 12.20...12.30  
2nd pressure hPa : 365  
Rack travel in m: 12.90...13.00  
3rd pressure hPa : 295  
Rack travel in m: 12.40...12.60

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 134.0...138.0  
1000 s: (131.0...141.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 108.0...111.0  
1000 s: (105.5...113.5)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.20  
Speed rpm : 1080...1090

#### STARTING FUEL DELIVERY

Speed rpm : 100

Remarks:  
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 8,2 a  
 Edition : 14.04.89  
 Replaces : 9.1.89  
 Test oil : ISO-4113

Combination no. : 0 401 846 898

Injection pump  
 Pump designation : PE6P120A32ORS3183-2  
 EP type number : 0 411 826 783  
 Governor  
 Governor design. : RQV250...1000PA851-3  
 Governor no. : 0 421 813 731

Customer-spec. information  
 Customer : DAF

Engine : HS 200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

---

Rack travel in mm : 10.40...10.50

---

Del.quantity cm<sup>3</sup>/ : 15.1...15.3  
 100 s : (14.8...15.6)

---

Spread cm<sup>3</sup> : 0.5  
 100 s : (0.9)

---

2nd speed rpm : 225.0  
 Rack travel in mm : 5.8...6.2  
 Del.quantity cm<sup>3</sup>/ : 1.7...2.3  
 100 s : (1.4...2.6)

Spread cm<sup>3</sup> : 0.8  
 100 s : (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225  
 travel mm : 0.40...0.80

2nd speed rpm : 400  
 travel mm : 2.10...2.50

3rd speed rpm : 800  
 travel mm : 4.70...5.10

4th speed rpm : 1250  
 travel mm : 8.30...8.70

5th speed rpm : 1350  
 travel mm : 9.20...9.80

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1225  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Aneroid pressure h: 1000  
 Del.quantity : 151.0...153.0  
 1000 : (148.0...156.0)

Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
Control lever  
position degrees: 115...123

Testing:  
1st rack travel in: 9.40  
Speed rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed rpm : 1310...1340  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 78...86

Testing:  
Speed rpm : 100  
Minimum rack trave: 7.10  
Speed rpm : 250  
Rack travel in mm : 5.50...5.70

CONSTANT REGULATION  
Speed rpm : 280...330

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 10.40...10.50

Measurement  
Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.10...10.20  
2nd pressure hPa : 385  
Rack travel in m: 10.30...10.40

START CUT-OUT

Speed 1/min : 170 (0)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 135.0...137.0  
1000 s: (132.0...140.0)

BREAKAWAY

J06

1st version  
1mm rack travel less than

full load rack tr: 9.40  
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 260.0...300.0  
1000 s: (256.0...304.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 8,3 p 1  
 Edition : 16.02.90  
 Replaces : 9.11.89  
 Test oil : ISO-4113

Combination no. : 0 401 846 899

Injection pump  
 Pump designation : PE6P110A72ORS3225  
 EP type number : 0 411 816 763  
 Governor  
 Governor design. : RQ250/1200PA913  
 Governor no. : 0 421 801 477

Customer-spec. information  
 Customer : DAF

Engine : HS 200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 G15

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.50...12.60

Del.quantity cm<sup>3</sup>/ : 12.4...12.6

100 s : (12.1...12.8)

Spread cm<sup>3</sup> : 0.4

100 s : (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 7.2...7.4

Del.quantity cm<sup>3</sup>/ : 1.4...1.9

100 s : (1.1...2.1)

Spread cm<sup>3</sup> : 0.4

100 s : (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del.quantity : 124.0...126.0

1000 : (121.5...128.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 15.8

Testing:

1st rack travel in: 11.50

Speed rpm : 1235...1250

2nd rack travel in: 4.00

Speed rpm : 1300...1330

4th rack travel in: 1450

Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250  
Rack travel in mm : 5.3

Testing:

Speed rpm : 100  
Minimum rack travel: 6.70  
Speed rpm : 250  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 2.00  
Speed rpm : 320...360

TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 12.80...12.90  
2nd speed rpm : 1200  
Rack travel in m: 12.70...12.90

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 12.50...12.60

Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.90...11.10  
2nd pressure hPa : 360  
Rack travel in m: 12.10...12.20  
3rd pressure hPa : 270  
Rack travel in m: 11.40...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 87.0...89.0  
1000 s: (84.5...91.5)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 11.50  
Speed rpm : 1235...1250

LOW IDLE

Speed rpm : 250

Rack travel in mm : 5.20...5.40

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 8,2 b  
 Edition : 14.04.89  
 Replaces : 9.1.89  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 899  
 Injection pump  
 Pump designation : PE6P120A320RS3183-2  
 EP type number : 0 411 826 783  
 Governor  
 Governor design. : RQ225/1200PA832-2  
 Governor no. : 0 421 801 465

Customer-spec. information  
 Customer : DAF

Engine : HS 200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 10.40...10.50

Del. quantity cm<sup>3</sup>/ : 15.1...15.3

100 s : (14.8...15.6)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 225.0

Rack travel in mm : 5.8...6.2

Del. quantity cm<sup>3</sup>/ : 1.7...2.3

100 s : (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s : (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h : 1000

Del. quantity : 151.0...153.0

1000 : (148.0...156.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 15.8

Testing:

1st rack travel in: 9.30

Speed rpm : 1235...1250

2nd rack travel in: 4.00

Speed rpm : 1310...1340

4th rack travel in: 1400

Speed rpm : 0.00...1.00



LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 225  
Rack travel in mm : 5.6

Testing:

Speed rpm : 100  
Minimum rack trave: 7.10  
Speed rpm : 225  
Rack travel in mm : 5.50...5.70  
Rack travel in mm : 2.00  
Speed rpm : 375...415

TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 850  
Rack travel in m: 10.40...10.50  
2nd speed rpm : 1200  
Rack travel in m: 10.30...10.50

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 10.40...10.50

Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.10...10.20  
2nd pressure hPa : 385  
Rack travel in m: 10.30...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 135.0...137.0  
1000 s: (132.0...140.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 9.30  
Speed rpm : 1235...1250

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 260.0...300.0  
1000 s: (256.0...304.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 8,3 p 5  
 Edition : 04.05.90  
 Replaces : 9.11.89  
 Test oil : ISO-4113

Combination no. : 0 401 846 905

Injection pump  
 Pump designation : PE6P110A72ORS3225Z  
 EP type number : 0 411 816 762  
 Governor  
 Governor design. : RQ250/1200PA913  
 Governor no. : 0 421 801 477

Customer-spec. information  
 Customer : DAF

Engine : HT 168

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.30...12.40

Del.quantity cm3/ : 12.0...12.2  
 100 s: (11.7...12.4)

Spread cm3 : 0.4  
 100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 7.2...7.4

Del.quantity cm3/ : 1.4...1.9  
 100 s: (1.1...2.1)

Spread cm3 : 0.4  
 100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 550

Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del.quantity : 120.0...122.0  
 1000 : (117.5...124.5)

Spread cm3 : 4.00  
 1000 : (7.50)

RATED SPEED

1st version

Setting point:  
 Speed rpm : 550  
 Rack travel in mm : 15.8

Testing:  
 1st rack travel in: 11.30  
 Speed rpm : 1235...1250

2nd rack travel in: 4.00  
 Speed rpm : 1320...1350

4th rack travel in: 14.00  
 Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250  
Rack travel in mm : 5.8

Testing:

Speed rpm : 100  
Minimum rack trave: 8.00  
Speed rpm : 250  
Rack travel in mm : 5.70...5.90  
Rack travel in mm : 2.00  
Speed rpm : 320...360

TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 12.60...12.70  
2nd speed rpm : 1200  
Rack travel in m: 12.50...12.70

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 12.30...12.40

Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.80...10.90  
2nd pressure hPa : 395  
Rack travel in m: 12.00...12.10  
3rd pressure hPa : 320  
Rack travel in m: 11.50...11.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 83.5...85.5  
1000 s: (81.0...88.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30  
Speed rpm : 1235...1250

LOW IDLE

Speed rpm : 250

Rack travel in mm : 5.70...5.90

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,0 x  
 Edition : 02.02.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 910  
 Injection pump  
 Pump designation : PE6P110A320LS3851  
 EP type number : 0 411 816 765  
 Governor  
 Governor design. : RQ300/1050PA187-26  
 Governor no. : 0 421 801 489

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM441

1st version kW : 160.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
 : (4.35...4.55)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.70...11.80

Del. quantity cm<sup>3</sup>/ : 12.2...12.4

100 s: (11.9...12.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.3)

2nd speed rpm : 300.0

Rack travel in mm : 7.2...7.8

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.4)

Spread cm<sup>3</sup> : 0.6

100 s: (1.1)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 13.10...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del. quantity : 122.0...124.0

1000 : (119.5...126.5)

Spread cm<sup>3</sup> : 8.50

1000 : (13.00)

RATED SPEED

1st version

Control Lever

position degrees: 103...111

Testing:

1st rack travel in: 10.70

Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1300  
Speed rpm : 0.00...2.00

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.5

Testing:

Speed rpm : 200  
Minimum rack trave: 9.10  
Speed rpm : 300  
Rack travel in mm : 7.20...7.80  
Rack travel in mm : 2.00  
Speed rpm : 420...460

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600  
Del.quantity cm3/ : 122.0...127.0  
1000 s: (119.5...129.5)  
Spread cm3 : 11.00  
1000 s: (14.)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 12,9 a  
 Edition : 05.03.90  
 Replaces : 1.12.89  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 915  
 Injection pump  
 Pump designation : PE6P120A32ORS3244  
 EP type number : 0 411 826 788  
 Governor  
 Governor design. : RQV250...1050PA808-4  
 Governor no. : 0 421 813 821

Customer-spec. information  
 Customer : ENASA

Engine : 98 R1 AX  
 1st version kw : 331.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 067  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.30...3.40  
 : (3.25...3.45)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 750  
 Rack travel in mm : 13.10...13.20  
 Del.quantity cm<sup>3</sup>/ : 28.7...28.9  
 100 s: (28.4...29.2)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 5.9...6.1  
 Del.quantity cm<sup>3</sup>/ : 2.5...3.1  
 100 s: (2.2...3.4)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40  
 2nd speed rpm : 350  
 travel mm : 1.90...2.50  
 3rd speed rpm : 700  
 travel mm : 4.50...5.10  
 4th speed rpm : 1095  
 travel mm : 8.00...8.20  
 5th speed rpm : 1185  
 travel mm : 9.00...9.40

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1110  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 750  
 Aneroid pressure h: 1200

Del.quantity : 287.0...289.0  
1000 : (284.0...292.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 116...124

Testing:  
1st rack travel in: 12.10  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 78...86

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION  
Speed rpm : 250...430

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 13.10...13.20

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.70...11.10  
2nd pressure hPa : 770  
Rack travel in m: 12.60...12.70  
3rd pressure hPa : 590  
Rack travel in m: 11.70...11.90

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 1030  
Del.quantity cm3/ : 275.0...281.0  
1000 s: (272.0...284.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 217.0...219.0  
1000 s: (214.0...222.0)

#### BREAKAWAY

1st version  
1mm rack travel Less than  
full load rack tr: 12.10  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 150.0...180.0  
1000 s: (146.0...184.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Remarks:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 h  
 Edition : 05.03.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 916  
 Injection pump  
 Pump designation : PE6P120A32ORS3248  
 EP type number : 0 411 826 792  
 Governor  
 Governor design. : RQ250/1000PA832-3  
 Governor no. : 0 421 801 506

Customer-spec. information

Customer : DAF  
 Engine : WS 242

1st version kW : 242.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder assembly : 1 688 901 019  
 Opening pressure, bar : 207...210  
 Orifice plate diameter mm : 0,8  
 Test lines : 1 680 750 075

Outside diameter x Wall thickness x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant. per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30  
 : (4.15...4.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 850  
 Rack travel in mm : 12.50...12.60  
 Del.quantity cm<sup>3</sup>/ : 20.9...21.1  
 100 s: (20.6...21.4)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 6.5...6.7  
 Del.quantity cm<sup>3</sup>/ : 1.4...2.0  
 100 s: (1.1...2.3)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 550  
 Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 850  
 Aneroid pressure h: 1000  
 Del.quantity : 209.0...211.0  
 1000 : (206.0...214.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 550  
 Rack travel in mm : 15.8

Testing:  
 1st rack travel in: 11.50  
 Speed rpm : 1035...1050  
 2nd rack travel in: 4.00



Speed rpm : 1125...1155  
4th rack travel in: 1250  
Speed rpm : 0.00...1.40

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6.0

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 335...375

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 850  
Rack travel in m: 13.10...13.20  
2nd speed rpm : 1000  
Rack travel in m: 13.00...13.20

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 12.50...12.60

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 11.00...11.20  
2nd pressure hPa : 340  
Rack travel in m: 12.10...12.20  
3rd pressure hPa : 250  
Rack travel in m: 11.40...11.60

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 164.0...166.0  
1000 s: (161.0...169.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.50  
Speed rpm : 1035...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 260.0...300.0  
1000 s: (256.0...304.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.50...6.70  
Del.quantity cm3/ : 14.0...20.0  
1000 s: (11.0...23.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 h1  
 Edition : 05.03.90  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 401 846 917

Injection pump  
 Pump designation : PE6P120A32ORS3248  
 EP type number : 0 411 826 792  
 Governor  
 Governor design. : RQV250...1000PA851-4  
 Governor no. : 0 421 813 828

Customer-spec. information  
 Customer : DAF

Engine : WS 242

1st version kW : 242.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30  
 : (4.15...4.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 850

---

Rack travel in mm : 12.50...12.60

---

Del.quantity cm<sup>3</sup>/ : 20.9...21.1  
 100 s: (20.6...21.4)

---

Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 6.5...6.7  
 Del.quantity cm<sup>3</sup>/ : 1.4...2.0  
 100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.40...1.60

2nd speed rpm : 400  
 travel mm : 3.20...3.60

3rd speed rpm : 800  
 travel mm : 5.80...6.20

4th speed rpm : 1000  
 travel mm : 7.90...8.10

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1025  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 850  
 Aneroid pressure h: 1000  
 Del.quantity : 209.0...211.0  
 1000 : (206.0...214.0)

Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
Control Lever  
position degrees: 117...125

Testing:  
1st rack travel in: 11.50  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
4th rack travel in: 1250  
Speed rpm : 0.00...1.40

LOW IDLE 1  
Control lever  
position degrees: 82...90

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION  
Speed rpm : 275...385

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 12.50...12.60

Measurement  
Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 11.00...11.20  
2nd pressure hPa : 340  
Rack travel in m: 12.10...12.20  
3rd pressure hPa : 250  
Rack travel in m: 11.40...11.60

START CUT-OUT

Speed 1/min : 200 (0)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 164.0...166.0  
1000 s: (161.0...169.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.50  
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 260.0...300.0  
1000 s: (256.0...304.0)

LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.50...6.70  
Del.quantity cm3/ : 14.0...20.0  
1000 s: (11.0...23.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,0 w  
 Edition : 12.04.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 918  
 Injection pump  
 Pump designation : PE6P110A320LS3851  
 EP type number : 0 411 816 765  
 Governor  
 Governor design. : RQV300...1050PA884-6  
 Governor no. : 0 421 813 832

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM441

1st version kW : 160.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
 : (4.35...4.55)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.70...11.80

Del.quantity cm<sup>3</sup>/ : 12.2...12.4

100 s: (11.9...12.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.3)

2nd speed rpm : 300.0

Rack travel in mm : 7.2...7.8

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.4)

Spread cm<sup>3</sup> : 0.6

100 s: (1.1)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.00...1.40

2nd speed rpm : 500  
 travel mm : 3.20...3.80

3rd speed rpm : 850  
 travel mm : 6.00...6.40

4th speed rpm : 1100  
 travel mm : 8.10...8.30

5th speed rpm : 1400  
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 13.10...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Del.quantity : 122.0...124.0  
1000 : (119.5...126.5)  
Spread cm<sup>3</sup> : 8.50  
1000 : (13.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 114...122

Testing:  
1st rack travel in: 10.70  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1350  
Speed rpm : 0.00...2.00

LOW IDLE 1  
Control lever  
position degrees: 85...93

Testing:  
Speed rpm : 200  
Minimum rack travel: 9.10  
Speed rpm : 300  
Rack travel in mm : 7.20...7.80  
Rack travel in mm : 2.00  
Speed rpm : 450...510

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 122.0...127.0  
1000 s: (119.5...129.5)  
Spread cm<sup>3</sup> : 11.00  
1000 s: (14.)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.70  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 10,0 u2  
 Edition : 06.04.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 921  
 Injection pump  
 Pump designation : PE6P110A32ORS3197  
 EP type number : 0 411 816 752  
 Governor  
 Governor design. : RQV250...1100PA589  
 Governor no. : 0 421 813 307

Customer-spec. information  
 Customer : VOLVO-MUNKTELL

Engine : TD102 KF

1st version kW : 200.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.70...11.80

Del.quantity cm<sup>3</sup>/ : 16.2...16.4

100 s: (15.9...16.7)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 4.3...4.5

Del.quantity cm<sup>3</sup>/ : 2.5...2.9

100 s: (2.2...3.2)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.20...1.30

2nd speed rpm : 350  
 travel mm : 2.20...2.70

3rd speed rpm : 450  
 travel mm : 3.70...4.10

4th speed rpm : 750  
 travel mm : 6.40...6.60

5th speed rpm : 1160  
 travel mm : 8.10...8.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1180

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 162.0...164.0

1000 : (159.0...167.0)

Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 115...123

Testing:  
1st rack travel in: 10.70  
Speed rpm : 1160...1170  
2nd rack travel in: 4.00  
Speed rpm : 1210...1240  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 60...68

Testing:  
Speed rpm : 100  
Minimum rack travel: 5.90  
Speed rpm : 250  
Rack travel in mm : 4.30...4.50

CONSTANT REGULATION  
Speed rpm : 250...400

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 11.70...11.80

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.70...9.90  
2nd pressure hPa : 390  
Rack travel in m: 11.40...11.50  
Rack travel in m: 10.10...10.30

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 1000  
Del.quantity cm<sup>3</sup>/ : 146.0...150.0  
1000 s: (143.0...153.0)  
Aneroid pressure h: -  
Speed rpm : 700

Del.quantity cm<sup>3</sup>/ : 127.0...129.0  
1000 s: (124.0...132.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.70  
Speed rpm : 1160...1170

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 160.0...190.0  
1000 s: (156.0...194.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.30...4.50  
Del.quantity cm<sup>3</sup>/ : 25.0...29.0  
1000 s: (22.0...32.0)  
Spread cm<sup>3</sup> : 4.50  
1000 s: (7.50)

Remarks:  
Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 11,9 e1  
 Edition : 23.03.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 922  
 Injection pump  
 Pump designation : PE6P120A32ORS3176-3  
 EP type number : 0 411 826 793  
 Governor  
 Governor design. : RQV250...1050PA808  
 Governor no. : 0 421 813 553

Customer-spec. information  
 Customer : ENASA

Engine : 96 R1 CX

1st version kW : 221.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90  
 : (3.75...3.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 12.80...12.90

Del.quantity cm<sup>3</sup>/ : 19.6...19.8

100 s: (19.3...20.1)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.9...6.1

Del.quantity cm<sup>3</sup>/ : 2.5...3.1

100 s: (2.2...3.4)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.40

2nd speed rpm : 350

travel mm : 1.90...2.50

3rd speed rpm : 700

travel mm : 4.50...5.10

4th speed rpm : 1095

travel mm : 8.00...8.20

5th speed rpm : 1185

travel mm : 9.00...9.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1110

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650

Aneroid pressure h: 900



Del.quantity : 196.0...198.0  
1000 : (193.0...201.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 115...123

Testing:  
1st rack travel in: 11.80  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1185...1215  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 78...86

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION  
Speed rpm : 250...500

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.80...12.90

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.60...10.00  
2nd pressure hPa : 500  
Rack travel in m: 12.30...12.40  
3rd pressure hPa : 190  
Rack travel in m: 10.40...10.60

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 1030  
Del.quantity cm<sup>3</sup>/ : 212.0...218.0  
1000 s: (209.0...221.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 123.0...125.0  
1000 s: (120.0...128.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.80  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Remarks:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,6 a 3  
 Edition : 24.02.89  
 Replaces : 5.84  
 Test oil : ISO-4113

Combination no. : 0 401 848 756

Injection pump  
 Pump designation : PE8P110A320LS3802-10  
 EP type number : 0 411 818 710  
 Governor  
 Governor design. : RQV300...1150PA486-3  
 Governor no. : 0 421 813 411

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM422

1st version kW : 184.0  
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 11.00...11.10

Del.quantity cm<sup>3</sup>/ : 11.2...11.6

100 s: (10.9...11.9)

Spread cm<sup>3</sup> : 0.7

100 s: (1.0)

2nd speed rpm : 300.0  
 Rack travel in mm : 8.4...8.6  
 Del.quantity cm<sup>3</sup>/ : 1.4...2.0  
 100 s: (1.1...2.2)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.60...1.80  
 2nd speed rpm : 800  
 travel mm : 5.80...6.20  
 3rd speed rpm : 1200  
 travel mm : 8.20...8.40  
 4th speed rpm : 1260  
 travel mm : 9.60...10.40

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1230  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1150  
 Del.quantity : 112.0...116.0  
 1000 : (109.0...119.0)

Spread cm<sup>3</sup> : 7.00  
1000 : (10.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 50...58

#### Testing:

1st rack travel in: 10.00  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1240...1270  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 18...26

#### Testing:

Speed rpm : 100  
Minimum rack travel: 9.70  
Speed rpm : 300  
Rack travel in mm : 8.00...8.20  
Rack travel in mm : 2.00  
Speed rpm : 410...480

#### TORQUE CONTROL

Dimension a mm : 0.20  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 11.00...11.10  
2nd speed rpm : 600  
Rack travel in m: 11.20...11.40

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 92.0...96.0  
1000 s: (89.0...99.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.00  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 12,8 a  
 Edition : 16.02.90  
 Replaces : 24.11.89  
 Test oil : ISO-4113

Combination no. : 0 401 848 780

Injection pump  
 Pump designation : PE8P120A920/5LS3174  
 EP type number : 0 411 828 719  
 Governor  
 Governor design. : RQV300...1150PA802  
 Governor no. : 0 421 813 538

Customer-spec. information  
 Customer : KHD

Engine : BF8L513C

1st version kW : 265.0  
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 15.00...19.00  
 Firing order : 1- 8- 7- 2- 6- 5-  
 4- 3

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 13.20...13.30

Del.quantity cm<sup>3</sup>/ : 16.6...16.8

100 s : (16.3...17.1)

Spread cm<sup>3</sup> : 0.6

100 s : (1.0)

2nd speed rpm : 300.0

Rack travel in mm : 7.6...7.8

Del.quantity cm<sup>3</sup>/ : 2.0...2.6

100 s : (1.7...2.9)

Spread cm<sup>3</sup> : 0.9

100 s : (1.3)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.00...1.40

2nd speed rpm : 400

travel mm : 2.20...2.80

3rd speed rpm : 550

travel mm : 3.50...4.10

4th speed rpm : 1200

travel mm : 8.20...8.40

5th speed rpm : 1285

travel mm : 9.00...9.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1220

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 900  
Del.quantity : 166.0...168.0  
1000 : (163.0...171.0)  
Spread cm<sup>3</sup> : 6.00  
1000 : (10.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 116...124

Testing:  
1st rack travel in: 12.20  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1310...1340  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 81...89

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.20  
Speed rpm : 300  
Rack travel in mm : 7.60...7.80

CONSTANT REGULATION  
Speed rpm : 300...510

TORQUE CONTROL  
Dimension a mm : 0.40  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 13.20...13.30  
2nd speed rpm : 700  
Rack travel in m: 13.50...13.70

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.40...13.60

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 12.80...13.00  
2nd pressure hPa : 500  
Rack travel in m: 13.10...13.20

START CUT-OUT

K02

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 167.0...171.0  
1000 s: (164.0...174.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 134.0...136.0  
1000 s: (131.0...139.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.20  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 170.0...190.0

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

#### APPLICATION

Special-purpose vehicle

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 L  
 Edition : 15.08.89  
 Replaces : 29.4.88  
 Test oil : ISO-4113

Combination no. : 0 401 848 798

Injection pump  
 Pump designation : PE8P110A320LS3846  
 EP type number : 0 411 818 717  
 Governor  
 Governor design. : RQ300/1050PA187-21  
 Governor no. : 0 421 801 438

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM442

1st version kW : 213.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
 : (4.35...4.55)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1050  


---

 Rack travel in mm : 13.00...13.10  


---

 Del.quantity cm<sup>3</sup>/ : 12.8...13.0  
 100 s: (12.5...13.2)  


---

 Spread cm<sup>3</sup> : 0.6  
 100 s: (0.9)  


---

 2nd speed rpm : 300.0  
 Rack travel in mm : 7.4...8.0  
 Del.quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.4)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 650  
 Rack travel in mm : 13.80...14.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1050  
 Del.quantity : 128.0...130.0  
 1000 : (125.5...132.5)  
 Spread cm<sup>3</sup> : 6.0  
 1000 : (9.5)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 650  
 Rack travel in mm : 14.2

Testing:

1st rack travel in: 12.00  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1155...1185  
4th rack travel in: 1300  
Speed rpm : 0.00...2.00

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.60

Testing:

Speed rpm : 200  
Minimum rack trave: 9.50  
Speed rpm : 300  
Rack travel in mm : 7.40...8.00  
Rack travel in mm : 2.00  
Speed rpm : 400...460

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750  
Del.quantity cm3/ : 128.0...134.0  
1000 s: (125.0...137.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 L 1  
 Edition : 15.08.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 401 848 798

Injection pump  
 Pump designation : PE8P110A320LS3846-1  
 EP type number : 0 411 818 719  
 Governor  
 Governor design. : RQ300/1050PA187-25  
 Governor no. : 0 421 801 482

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM442

1st version kW : 213.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
 : (4.35...4.55)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1050

---

Rack travel in mm : 11.70...11.80

---

Del.quantity cm<sup>3</sup>/ : 12.0...12.2  
 100 s: (11.8...12.5)

---

Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

---

2nd speed rpm : 300.0  
 Rack travel in mm : 7.2...7.8  
 Del.quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.4)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (0.9)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 650  
 Rack travel in mm : 13.10...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1050  
 Del.quantity : 120.0...122.0  
 1000 : (118.0...125.0)  
 Spread cm<sup>3</sup> : 8.50  
 1000 : (12.00)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 650  
 Rack travel in mm : 13.5



Testing:  
1st rack travel in: 10.70  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1300  
Speed rpm : 0.00...2.00

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.60

Testing:  
Speed rpm : 200  
Minimum rack trave: 9.10  
Speed rpm : 300  
Rack travel in mm : 7.20...7.80  
Rack travel in mm : 2.00  
Speed rpm : 420...460

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.70  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:  
:



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 d 8  
 Edition : 12.01.90  
 Replaces : 28.6.89  
 Test oil : ISO-4113  
 Combination no. : 0 401 848 804  
 Injection pump  
 Pump designation : PE8P110A320LS3842-1  
 EP type number : 0 411 818 716  
 Governor  
 Governor design. : RQV350..1050PA378-7  
 Governor no. : 0 421 813 714

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442

1st version kW : 213.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1050  
 Rack travel in mm : 12.70...12.80  
 Del.quantity cm<sup>3</sup>/ : 13.7...13.9  
 100 s: (13.4...14.1)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

2nd speed rpm : 350.0  
 Rack travel in mm : 8.0...8.3  
 Del.quantity cm<sup>3</sup>/ : 1.5...2.1  
 100 s: (1.2...2.3)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.50...1.70  
 2nd speed rpm : 800  
 travel mm : 4.90...5.30  
 3rd speed rpm : 1100  
 travel mm : 7.90...8.50  
 4th speed rpm : 1150  
 travel mm : 8.90...9.70

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1110  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1050  
 Del.quantity : 137.0...139.0  
 1000 : (134.5...141.5)

Spread cm3 : 4.00  
1000 : (7.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 114...122

#### Testing:

1st rack travel in: 11.70  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1140...1170  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 66...74

#### Testing:

Speed rpm : 250  
Minimum rack travel: 9.50  
Speed rpm : 350  
Rack travel in mm : 8.00...8.30

#### CONSTANT REGULATION

Speed rpm : 350...450

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm3/ : 124.0...128.0  
1000 s: (121.0...131.0)  
Spread cm3 : 5.00  
1000 s: (8.00)  
Speed rpm : 1050  
Del.quantity cm3/ : 87.0...89.0 \*  
1000 s: (84.0...92.0)  
Spread cm3 : 6.00  
1000 s: (9.00)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.70  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

:

\* = Set at reduced-delivery stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 L 2  
 Edition : 12.04.90  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 401 848 805

Injection pump  
 Pump designation : PE8P110A32OLS3846-1  
 EP type number : 0 411 818 719  
 Governor  
 Governor design. : RQ300/1050PA187-27  
 Governor no. : 0 421 801 488

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM442

1st version kW : 195.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
 : (4.35...4.55)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.90...11.00

Del.quantity cm<sup>3</sup>/ : 11.1...11.3

100 s: (10.8...11.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.3)

2nd speed rpm : 300.0

Rack travel in mm : 7.0...7.6

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.4)

Spread cm<sup>3</sup> : 0.6

100 s: (1.1)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 13.10...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 111.0...113.0

1000 : (108.5...115.5)

Spread cm<sup>3</sup> : 8.50

1000 : (13.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 13.5

Testing:

1st rack travel in: 9.90  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...2.00

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.3

Testing:

Speed rpm : 200  
Minimum rack trave: 9.20  
Speed rpm : 300  
Rack travel in mm : 7.00...7.60  
Rack travel in mm : 2.00  
Speed rpm : 400...440

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600  
Del.quantity cm3/ : 105.0...111.0  
1000 s: (102.5...113.5)  
Spread cm3 : 11.00  
1000 s: (14.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.90  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 l 3  
 Edition : 02.01.90  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 401 848 806

Injection pump  
 Pump designation : PE8P110A320LS3846-1  
 EP type number : 0 411 818 719  
 Governor  
 Governor design. : RQ300/1050PA187-28  
 Governor no. : 0 421 801 492

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442

1st version kW : 213.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
 : (4.35...4.55)

Rack travel in mm : 9.00...12.00

Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1050

---

Rack travel in mm : 11.70...11.80

---

Del.quantity cm<sup>3</sup>/ : 12.2...12.4  
 100 s: (11.9...12.6)

---

Spread cm<sup>3</sup> : 0.8  
 100 s: (1.3)

---

2nd speed rpm : 300.0  
 Rack travel in mm : 7.2...7.8  
 Del.quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.4)

Spread cm<sup>3</sup> : 0.6  
 100 s: (1.1)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 650

Rack travel in mm : 13.10...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1050  
 Del.quantity : 122.0...124.0  
 1000 : (119.5...126.5)

Spread cm<sup>3</sup> : 8.50  
 1000 : (13.00)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 650  
 Rack travel in mm : 13.5

Testing:  
1st rack travel in: 10.70  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1300  
Speed rpm : 0.00...2.00

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.5

Testing:  
Speed rpm : 200  
Minimum rack trave: 9.10  
Speed rpm : 300  
Rack travel in mm : 7.20...7.80  
Rack travel in mm : 2.00  
Speed rpm : 420...460

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 122.0...127.0  
1000 s: (119.5...129.5)  
Spread cm<sup>3</sup> : 11.00  
1000 s: (14.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.70  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:  
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 r  
 Edition : 12.04.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 848 808  
 Injection pump  
 Pump designation : PE8P110A320LS3846-1  
 EP type number : 0 411 818 719  
 Governor  
 Governor design. : RQV300...1Q50PA884-5  
 Governor no. : 0 421 813 831

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442  
 1st version kW : 213.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Overflow  
 quantity min. 1/h: 100...120  
 Test nozzle holder  
 assembly : 1 688 901 101  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,6  
 Test lines : 1 680 750 008  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 4.40...4.50  
 : (4.35...4.55)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 : 4- 1  
 Phasing : 0-45-90-135-180-225-  
 : 270-315  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1050  
 Rack travel in mm : 11.70...11.80  
 Del. quantity cm<sup>3</sup>/ : 12.2...12.4  
 100 s: (11.9...12.6)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.3)  
 2nd speed rpm : 300.0  
 Rack travel in mm : 7.2...7.8  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.4)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (1.1)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.00...1.40  
 2nd speed rpm : 500  
 travel mm : 3.20...3.80  
 3rd speed rpm : 850  
 travel mm : 6.00...6.40  
 4th speed rpm : 1100  
 travel mm : 8.10...8.30  
 5th speed rpm : 1400  
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 650  
 Rack travel in mm : 13.10...13.90

FULL LOAD DELIV. AT FULL LOAD STOP



Remarks:

:

1st version  
Speed rpm : 1050  
Del.quantity : 122.0...124.0  
1000 : (119.5...126.5)  
Spread cm<sup>3</sup> : 8.50  
1000 : (13.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 114...122

Testing:  
1st rack travel in: 10.70  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1350  
Speed rpm : 0.00...2.00

LOW IDLE 1  
Control lever  
position degrees: 85...93

Testing:  
Speed rpm : 200  
Minimum rack trave: 9.10  
Speed rpm : 300  
Rack travel in mm : 7.20...7.80  
Rack travel in mm : 2.00  
Speed rpm : 450...510

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 122.0...127.0  
1000 s: (119.5...129.5)  
Spread cm<sup>3</sup> : 11.00  
1000 s: (14.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.70  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 r 1  
 Edition : 12.04.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 848 810  
 Injection pump  
 Pump designation : PE8P110A320LS3846-1  
 EP type number : 0 411 818 719  
 Governor  
 Governor design. : RQV300...1050PA884-7  
 Governor no. : 0 421 813 859

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442

1st version kW : 195.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
 : (4.35...4.55)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.90...11.00

Del.quantity cm<sup>3</sup>/ : 11.1...11.3

100 s: (10.8...11.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.3)

2nd speed rpm : 300.0

Rack travel in mm : 7.2...7.8

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.4)

Spread cm<sup>3</sup> : 0.6

100 s: (1.1)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.00...1.40

2nd speed rpm : 500

travel mm : 3.20...3.80

3rd speed rpm : 850

travel mm : 6.00...6.40

4th speed rpm : 1100

travel mm : 8.10...8.30

5th speed rpm : 1400

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 13.10...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Del.quantity : 111.0...113.0  
1000 : (108.5...115.5)  
Spread cm<sup>3</sup> : 8.50  
1000 : (13.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 104...112

Testing:  
1st rack travel in: 9.90  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1350  
Speed rpm : 0.00...2.00

LOW IDLE 1  
Control lever  
position degrees: 85...93

Testing:  
Speed rpm : 200  
Minimum rack trave: 9.10  
Speed rpm : 300  
Rack travel in mm : 7.20...7.80  
Rack travel in mm : 2.00  
Speed rpm : 450...510

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.90  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 c 8  
 Edition : 06.04.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 848 812  
 Injection pump  
 Pump designation : PE8P110A320LS3842  
 EP type number : 0 411 818 714  
 Governor  
 Governor design. : RQ300/1050PA187-29  
 Governor no. : 0 421 801 527

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442

1st version kW : 206.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1050  


---

 Rack travel in mm : 11.80...11.90  


---

 Del.quantity cm3/ : 12.4...12.6  
 100 s: (12.1...12.8)  


---

 Spread cm3 : 0.4  
 100 s: (0.7)

2nd speed rpm : 300.0  
 Rack travel in mm : 8.2...8.5  
 Del.quantity cm3/ : 1.5...2.1  
 100 s: (1.2...2.3)  
 Spread cm3 : 0.4  
 100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 650  
 Rack travel in mm : 13.60...14.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1050  
 Del.quantity : 124.0...126.0  
 1000 : (121.5...128.5)  
 Spread cm3 : 4.00  
 1000 : (7.50)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 650  
 Rack travel in mm : 14.0

Testing:  
 1st rack travel in: 10.80

Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1350  
Speed rpm : 0.00...2.00

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.9

Testing:

Speed rpm : 200  
Minimum rack trave: 9.00  
Speed rpm : 300  
Rack travel in mm : 6.80...7.00  
Rack travel in mm : 2.00  
Speed rpm : 400...440

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750  
Del.quantity cm3/ : 109.0...112.0  
1000 s: (106.0...115.0)  
Spread cm3 : 7.00  
1000 s: (10.0)

RACK STOP ADJUSTMENT

Speed rpm : 600

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.80  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

- 6- 3- 5- 2

Note remarks

Test sheet : MB 18,3 b  
 Edition : 06.04.90  
 Replaces : 8.81  
 Test oil : ISO-4113  
 Combination no. : 0 401 849 701  
 Injection pump  
 Pump designation : PE10P110A320LS3808  
 EP type number : 0 411 819 700  
 Governor  
 Governor design. : RQV300...1150PA524-2  
 Governor no. : 0 421 813 264

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM 423

1st version kW : 259.0  
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 10- 9- 4- 1- 8- 7

Phasing : 0-45-72-117-144-189-  
 216-261-288-333  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm : 1150  
 Rack travel in mm : 12.20...12.30  
 Del.quantity cm<sup>3</sup>/ : 12.3...12.5  
 100 s : (12.0...12.8)  
 Spread cm<sup>3</sup> : 0.4  
 100 s : (0.8)

2nd speed rpm : 300.0  
 Rack travel in mm : 8.3...8.6  
 Del.quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s : (1.3...2.5)  
 Spread cm<sup>3</sup> : 0.4  
 100 s : (0.7)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1230  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1150  
 Del.quantity : 123.0...125.0  
 1000 : (120.0...128.0)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (8.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 50...58

Testing:  
 1st rack travel in: 11.20  
 Speed rpm : 1190...1200  
 2nd rack travel in: 4.00  
 Speed rpm : 1245...1275  
 4th rack travel in: 1300  
 Speed rpm : 0.00...0.50

LOW IDLE 1

Control lever  
position degrees: 18...26

Testing:

Speed rpm : 100  
Minimum rack travel: 10.10  
Speed rpm : 300  
Rack travel in mm : 8.30...8.60

CONSTANT REGULATION

Speed rpm : 330...465

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 115.0...119.0  
1000 s: (112.0...122.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (9.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20  
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 16,0 d2  
 Edition : 16.02.90  
 Replaces : 24.7.87  
 Test oil : ISO-4113

Combination no. : 0 401 849 740

Injection pump  
 Pump designation : PE10P110A920/5LS3164  
 EP type number : 0 411 819 708  
 Governor  
 Governor design. : RQV300...1150PA549-3  
 Governor no. : 0 421 813 664

Customer-spec. information  
 Customer : KHD

Engine : BF10L513

1st version kW : 294.0  
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 10- 9- 4- 3- 6-  
 5- 8- 7- 2

Phasing : 0-27-72-99-144-171-  
 216-243-288-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150  


---

 Rack travel in mm : 12.80...12.90  


---

 Del.quantity cm3/ : 14.8...15.0  
 100 s: (14.5...15.3)  


---

 Spread cm3 : 0.4  
 100 s: (0.7)  


---

2nd speed rpm : 300.0  
 Rack travel in mm : 7.5...7.7  
 Del.quantity cm3/ : 1.2...1.7  
 100 s: (1.0...2.0)  
 Spread cm3 : 0.4  
 100 s: (0.7)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.00...1.40  
 2nd speed rpm : 450  
 travel mm : 2.60...3.20  
 3rd speed rpm : 700  
 travel mm : 4.40...5.00  
 4th speed rpm : 1195  
 travel mm : 8.10...8.30  
 5th speed rpm : 1310  
 travel mm : 9.20...9.60

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1220  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1150  
 Aneroid pressure h: 1200  
 Del.quantity : 148.5...150.5  
 1000 : (145.0...153.0)



Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 117...125

Testing:  
1st rack travel in: 11.80  
Speed rpm : 1195...1205  
2nd rack travel in: 4.00  
Speed rpm : 1295...1325  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 71...79

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 300  
Rack travel in mm : 7.50...7.70

#### CONSTANT REGULATION

Speed rpm : 300...530

#### TORQUE CONTROL

Dimension a mm : 0.40  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 12.80...12.90  
2nd speed rpm : 650  
Rack travel in m: 13.20...13.30  
3rd speed rpm : 840  
Rack travel in m: 13.10...13.30  
4th speed rpm : 1010  
Rack travel in m: 12.90...13.10

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 450  
Pressure hPa : 1200  
Rack travel mm : 13.20...13.30

#### Measurement

Speed 1/min : 450

1st pressure hPa : -  
Rack travel in m: 11.80...12.00  
2nd pressure hPa : 850  
Rack travel in m: 12.75...12.85  
3rd pressure hPa : 650

Rack travel in m: 12.00...12.20

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 154.0...158.0  
1000 s: (151.0...161.0)  
Aneroid pressure h: -  
Speed rpm : 450  
Del.quantity cm<sup>3</sup>/ : 118.5...121.5  
1000 s: (116.0...124.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 11.80  
Speed rpm : 1195...1205

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...165.0  
1000 s: (131.0...169.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 7.50...7.70  
Del.quantity cm<sup>3</sup>/ : 12.5...17.5  
1000 s: (10.0...20.0)  
Spread cm<sup>3</sup> : 4.50  
1000 s: (7.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 18,2 f2  
 Edition : 19.03.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 849 744B  
 Injection pump  
 Pump designation : PE10P120A520/4LS3849  
 EP type number : 0 411 829 708  
 Governor  
 Governor design. : RQ1050PA663-7  
 Governor no. : 0 421 801 331

Cust. part no. : 2-7977

Customer-spec. information  
 Customer : MAN

Engine : D2840 LE

1st version kw : 352.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30  
 : (4.15...4.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 10- 9- 4- 1- 8- 7  
 - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
 216-261-288-333

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.30...11.40

Del.quantity cm<sup>3</sup>/ : 19.4...19.6

100 s: (19.1...19.9)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.3...4.7

Del.quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 194.0...196.0

1000 : (191.0...199.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 10.30

Speed rpm : 1050...1055

2nd rack travel in: 4.00

Speed rpm : 1090...1105

4th rack travel in: 1150

Speed rpm : 0.00...1.00

STARTING FUEL DELIVERY

Speed rpm : 100

Remarks:  
:

APPLICATION

Generator set



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 18,2 i  
 Edition : 30.03.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 849 745  
 Injection pump  
 Pump designation : PE10P120A520/4LS3855  
 EP type number : 0 411 829 709  
 Governor  
 Governor design. : RQ300/1000PA837  
 Governer no. : 0 421 801 372

Customer-spec. information  
 Customer : MAN

Engine : D2840LF/460

1st version kW : 338.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 3.90...4.00  
 : (3.85...4.05)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 10- 9- 4- 1- 8- 7  
 - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
 216-261-288-333  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm : 1000  
 Rack travel in mm : 10.50...10.60  
 Del.quantity cm3/ : 20.4...20.6  
 100 s : (20.1...20.9)  
 Spread cm3 : 0.5  
 100 s : (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 5.2...5.4  
 Del.quantity cm3/ : 1.7...2.3  
 100 s : (1.4...2.6)  
 Spread cm3 : 0.8  
 100 s : (1.2)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2  
 Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Aneroid pressure h: 1000  
 Del.quantity : 204.0...206.0  
 1000 : (201.0...209.0)  
 Spread cm3 : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 600  
 Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.50  
Speed rpm : 1045...1060  
2nd rack travel in: 4.00  
Speed rpm : 1125...1155  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.3

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.80  
Speed rpm : 300  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 2.00  
Speed rpm : 365...405

TORQUE CONTROL  
Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 11.00...11.10  
2nd speed rpm : 600  
Rack travel in m: 11.00...11.20

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 10.50...10.60

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.20...9.40  
2nd pressure hPa : 380  
Rack travel in m: 9.60...9.70  
3rd pressure hPa : 500  
Rack travel in m: 10.10...10.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 144.0...146.0  
1000 s: (141.0...149.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.50  
Speed rpm : 1045...1060

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 190.0...210.0  
1000 s: (186.0...214.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.20...5.40  
Del.quantity cm<sup>3</sup>/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

: MAN - NR. 2-7778

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 16,0 d5  
 Edition : 16.02.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 849 747  
 Injection pump  
 Pump designation : PE10P110A920/5LS3164  
 EP type number : 0 411 819 708  
 Governor  
 Governor design. : RQV300...1075PA821-1  
 Governor no. : 0 421 813 837

Customer-spec. information  
 Customer : KHD

Engine : BF10L513 ECE

1st version kW : 278.0  
 Rated speed : 2150

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 10- 9- 4- 3- 6-  
 5- 8- 7- 2

Phasing : 0-27-72-99-144-171-2  
 16-243-288-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1075  
 Rack travel in mm : 12.00...12.10  
 Del.quantity cm<sup>3</sup>/ : 14.2...14.4  
 100 s: (13.9...14.7)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

2nd speed rpm : 300.0  
 Rack travel in mm : 7.0...7.2  
 Del.quantity cm<sup>3</sup>/ : 1.2...1.8  
 100 s: (0.9...2.1)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.00...1.40  
 2nd speed rpm : 450  
 travel mm : 3.00...3.50  
 3rd speed rpm : 800  
 travel mm : 5.00...5.50  
 4th speed rpm : 1120  
 travel mm : 8.40...8.60  
 5th speed rpm : 1210  
 travel mm : 9.60...10.00

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1120  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1075  
 Aneroid pressure h: 900  
 Del.quantity : 142.0...144.0  
 1000 : (139.0...147.0)

Spread cm3 : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 117...125

Testing:  
1st rack travel in: 11.00  
Speed rpm : 1115...1125  
2nd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 83...91

Testing:  
Speed rpm : 100  
Minimum rack travel: 10.50  
Speed rpm : 300  
Rack travel in mm : 7.00...7.20

CONSTANT REGULATION  
Speed rpm : 300...550

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.00...12.10

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.20...11.40  
2nd pressure hPa : 430  
Rack travel in m: 11.80...11.90

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 800  
Del.quantity cm3/ : 143.0...147.0  
1000 s: (141.0...149.0)

Aneroid pressure h: -  
Speed rpm : 450  
Del.quantity cm3/ : 117.0...119.0  
1000 s: (114.0...122.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.00  
Speed rpm : 1115...1125

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...165.0  
1000 s: (131.0...169.0)

Remarks:

:  
Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : WAU 1 a 1
Edition : 14.02.1990
Replaces : -
Test oil : ISO-4113
Combination no. : 0 401 876 098
Injection pump
Pump designation : PE6P130A420LS67
Governor
Governor design. : RSV300...900P4/308DR

Customer-spec. information
Customer : WAUKESHA

Engine : F-1197 D

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 35...45
Inlet press., bar : 1.5
Test nozzle holder
assembly : 0 681 443 022

Opening
pressure, bar : 172...175

Test lines : 1 680 750 026

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

BEGINNING OF DELIVERY

Prestroke mm : 2.0...2.1
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300
Tolerance + - ° : 0.5 (0.75)

BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 9.00

Del.quantity cm3/ : 20.7...21.4

100 s : (-)

Spread cm3 : 0.8

100 s : (-)

2nd speed rpm : 600
Rack travel in mm : 12.00
Del.quantity cm3/ : 28.3...30.1

100 s : (-)

3rd speed rpm : 200
Rack travel in mm : 6.00
Del.quantity cm3/ : 4.6...6.3

100 s : (-)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.40

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 225.0...229.0

1000 : (-)

RATED SPEED

1st version

Control lever

position degrees: 48...56

Testing:

1st rack travel in: 16.00

Speed rpm : 890...910

2nd rack travel in: 11.00

Speed rpm : 925...955

3rd rack travel in: 3.00...5.00

Speed rpm : 985...1015

4th rack travel in: 1100

Speed rpm : 0.0...1.00

LOW IDLE 1

Control lever

position degrees: 20...28

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.00

Testing:

Speed rpm : 100



Minimum rack trave: 19.00  
Speed rpm : 300  
Rack travel in mm : 5.70...6.30  
Rack travel in mm : 3.70  
Speed rpm : 400  
Speed rpm : 360  
Maximum rack trave: 1.00

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 880  
Rack travel in m: -  
2nd speed rpm : 600  
Rack travel in m: -  
3rd speed rpm : 500  
Rack travel in m: 0.10...0.30  
4th speed rpm : 360  
Rack travel in m: 0.40...0.60

#### FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700  
Del.quantity cm3/ : 234.0...240.0  
1000 s: (-)  
Speed rpm : 500  
Del.quantity cm3/ : 226.0...232.0  
1000 s: (-)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: ?  
Speed rpm : 920

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 589.0...591.0  
1000 s: (-)

#### HIGH IDLE

1st version

Speed rpm : 970  
Del.quantity cm3/ : 28.0...38.0  
1000 s: (-)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,6 o7  
 Edition : 04.05.90  
 Replaces : 12.9.86  
 Test oil : ISO-4113

Combination no. : 0 401 876 295

Injection pump  
 Pump designation : PE6P120A32ORS415-1  
 EP type number : 0 411 826 123  
 Governor  
 Governor design. : RSV250...1000P5A508-1  
 Governor no. : 0 421 833 194

Customer-spec. information  
 Customer : DAF

Engine : DKZ 1160

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

L03

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 850

---

Rack travel in mm : 12.50...12.60

---

Del.quantity cm<sup>3</sup>/ : 20.6...20.8  
 100 s: (20.3...21.1)

---

Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 6.7...6.9  
 Del.quantity cm<sup>3</sup>/ : 1.4...2.0  
 100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 850  
 Aneroid pressure h: 700  
 Del.quantity : 206.0...208.0  
 1000 : (203.0...211.0)

Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 45...53

Testing:

1st rack travel in: 11.50  
 Speed rpm : 1035...1045  
 2nd rack travel in: 4.00  
 Speed rpm : 1115...1145

3rd rack travel in: 4.00  
Speed rpm : 1180...1220  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6.0

#### Testing:

Speed rpm : 100  
Speed rpm : 250  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.00  
Speed rpm : 630...690

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 850  
Rack travel in m: 12.70...12.80  
2nd speed rpm : 400  
Rack travel in m: 12.70...12.90  
3rd speed rpm : 300  
Rack travel in m: 13.00...13.50

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 12.50...12.60

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.30...10.50  
2nd pressure hPa : 340  
Rack travel in m: 11.80...11.90  
3rd pressure hPa : 260  
Rack travel in m: 10.60...11.00

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 140.0...142.0  
1000 s: (137.0...145.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.50  
Speed rpm : 1035...1045

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 305.0...345.0  
1000 s: (301.0...349.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.40...6.60

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN 6,1 q  
 Edition : 12.01.90  
 Replaces : 10.2.89  
 Test oil : ISO-4113

Combination no. : 0 401 876 327

Injection pump  
 Pump designation : PE6P110A320RS499  
 EP type number : 0 411 816 169  
 Governor  
 Governor design. : RSV325...1400P2A374-  
 3  
 Governor no. : 0 421 833 220

Customer-spec. information  
 Customer : VOLVO-PENTA

Engine : TAMD61A

1st version kW : 220.0  
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness : 6.00X1.50X600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60  
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.10...11.20

Del.quantity cm<sup>3</sup>/ : 12.0...12.2

100 s: (11.7...12.5)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 325.0

Rack travel in mm : 4.1...4.3

Del.quantity cm<sup>3</sup>/ : 1.1...1.5

100 s: (0.9...1.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 900

Del.quantity : 120.5...122.5

1000 : (117.5...125.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 114...122

Testing:

1st rack travel in: 10.10

Speed rpm : 1450...1460

2nd rack travel in: 4.00  
Speed rpm : 1530...1560  
4th rack travel in: 1630  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 75...83  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 3.7  
Speed rpm : 325  
Rack travel in mm : 4.10...4.30  
Rack travel in mm : 2.00  
Speed rpm : 440...500

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 11.00...11.20

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.50...8.70  
2nd pressure hPa : 360  
Rack travel in m: 8.70...8.80  
3rd pressure hPa : 730  
Rack travel in m: 10.60...10.80

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 1400  
Del.quantity cm<sup>3</sup>/ : 122.5...126.5  
1000 s: (119.5...129.5)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 54.5...58.5  
1000 s: (51.5...61.5)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 10.10  
Speed rpm : 1450...1460

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...165.0

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.10...4.30  
Del.quantity cm<sup>3</sup>/ : 11.0...15.0  
1000 s: (9.0...17.0)  
Spread cm<sup>3</sup> : 3.00  
1000 s: (6.00)

Remarks:

#### APPLICATION

Navy

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 10,1 f  
 Edition : 30.03.90  
 Replaces : 13.12.89  
 Test oil : ISO-4113

Combination no. : 0 401 876 332

Injection pump  
 Pump designation : PE6P100A820LS130  
 EP type number : 0 411 806 179  
 Governor  
 Governor design. : RSV250...1000P1A532  
 Governor no. : 0 421 833 273

Customer-spec. information  
 Customer : ENASA

Engine : 9105.42.25.21

1st version kW : 113.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00

L07

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 11.90...12.00

Del.quantity cm<sup>3</sup>/ : 11.3...11.5

100 s: (11.1...11.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del.quantity cm<sup>3</sup>/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del.quantity : 113.0...115.0

1000 : (111.0...117.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 84...92

Testing:

1st rack travel in: 10.90

Speed rpm : 790...800

2nd rack travel in: 4.00

Speed rpm : 815...845

3rd rack travel in: 4.00  
Speed rpm : 815...845  
4th rack travel in: 1000  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 63...71  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 330...390

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 11.90...12.00  
2nd speed rpm : 450  
Rack travel in m: 11.90...12.10  
3rd speed rpm : 300  
Rack travel in m: 13.20...13.80

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.90  
Speed rpm : 790...800

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 260.0...280.0  
1000 s: (256.0...284.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Remarks:  
:

#### APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 f  
 Edition : 30.03.90  
 Replaces : 16.6.88  
 Test oil : ISO-4113

Combination no. : 0 401 876 335

Injection pump  
 Pump designation : PE6P120A320RS415-1  
 EP type number : 0 411 826 123  
 Governor  
 Governor design. : RSV250...1100P5A508-8  
 Governor no. : 0 421 833 298

Customer-spec. information  
 Customer : DAF

Engine : DKV 1160

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 11.10...11.20

Del.quantity cm<sup>3</sup>/ : 17.1...17.3  
 100 s: (16.8...17.6)

Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 6.7...6.9  
 Del.quantity cm<sup>3</sup>/ : 1.4...2.0  
 100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 650  
 Aneroid pressure h: 700  
 Del.quantity : 171.0...173.0  
 1000 : (168.0...176.0)

Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 95...103

Testing:  
 1st rack travel in: 9.10  
 Speed rpm : 1135...1145  
 2nd rack travel in: 4.00  
 Speed rpm : 1175...1205



3rd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1375  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 66...74  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.8

#### Testing:

Speed rpm : 100  
Speed rpm : 250  
Rack travel in mm : 6.20...6.40  
Rack travel in mm : 2.00  
Speed rpm : 630...730

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 650  
Rack travel in m: 11.40...11.50  
2nd speed rpm : 1090  
Rack travel in m: 10.10...10.30  
3rd speed rpm : 800  
Rack travel in m: 10.80...11.00  
4th speed rpm : 850  
Rack travel in m: 10.40...10.70

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 11.10...11.20

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 9.50...9.70  
2nd pressure hPa : 290  
Rack travel in m: 10.70...10.90  
3rd pressure hPa : 260  
Rack travel in m: 10.20...10.50

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 1090  
Del.quantity cm<sup>3</sup>/ : 158.0...162.0  
1000 s: (155.0...165.0)  
Aneroid pressure h: -  
Speed rpm : 600

Del.quantity cm<sup>3</sup>/ : 129.0...131.0  
1000 s: (126.0...134.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.10  
Speed rpm : 1135...1145

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 310.0...350.0  
1000 s: (306.0...354.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.20...6.40

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 g  
 Edition : 16.02.90  
 Replaces : 9.11.89  
 Test oil : ISO-4113

Combination no. : 0 401 876 336

Injection pump  
 Pump designation : PE6P120A32ORS415-1  
 EP type number : 0 411 826 123  
 Governor  
 Governor design. : RSV250...1050P5A539  
 Governer no. : 0 421 833 299

Customer-spec. information  
 Customer : DAF

Engine : KT 191

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 650

---

Rack travel in mm : 10.80...10.90

---

Del.quantity cm<sup>3</sup>/ : 16.1...16.3

---

100 s : (15.8...16.6)

---

Spread cm<sup>3</sup> : 0.5

---

100 s : (0.9)

---

2nd speed rpm : 250.0

Rack travel in mm : 6.4...6.8

Del.quantity cm<sup>3</sup>/ : 1.4...2.0

100 s : (1.1...2.3)

Spread cm<sup>3</sup> : 0.8

100 s : (1.2)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650

Aneroid pressure h: 700

Del.quantity : 161.0...163.0

1000 : (158.0...166.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 96...104

Testing:

1st rack travel in: 9.20  
 Speed rpm : 1085...1095

2nd rack travel in: 4.00  
 Speed rpm : 1125...1155

3rd rack travel in: 4.00

Speed rpm : 1150...1180  
4th rack travel in: 1320  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 70...78  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.8  
Speed rpm : 250  
Rack travel in mm : 6.20...6.40  
Rack travel in mm : 2.00  
Speed rpm : 630...730

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1040  
Rack travel in m: 10.20...10.40  
2nd speed rpm : 650  
Rack travel in m: 11.10...11.20  
3rd speed rpm : 805  
Rack travel in m: 10.80...11.00  
4th speed rpm : 850  
Rack travel in m: 10.50...10.70

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 10.80...10.90

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 9.50...9.70  
2nd pressure hPa : 310  
Rack travel in m: 10.40...10.50  
3rd pressure hPa : 250  
Rack travel in m: 9.80...10.10

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 1040  
Del.quantity cm<sup>3</sup>/ : 160.0...164.0  
1000 s: (157.0...167.0)

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 130.0...132.0  
1000 s: (127.0...135.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.20  
Speed rpm : 1085...1095

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 300.0...340.0  
1000 s: (296.0...344.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.20...6.40

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IFS 23,1 d  
 Edition : 15.03.90  
 Replaces : 15.8.89  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 337  
 Injection pump  
 Pump designation : PE6P130A320S521  
 EP type number : 0 411 836 044  
 Governor  
 Governor design. : RSV350...1500POA524  
 Governor no. : 0 421 833 256

Customer-spec. information  
 Customer : ISOTTA

Engine : ID38 SS-6V

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 067  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 18.00...21.00

Firing order : 1- 2- 3- 4- 5- 6

Phasing : 0-45-120-165-240-285

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1500  
 Rack travel in mm : 12.50...12.60  
 Del.quantity cm<sup>3</sup>/ : 23.9...24.2  
 100 s: (23.5...24.5)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

2nd speed rpm : 500.0  
 Rack travel in mm : 8.2...8.4  
 Del.quantity cm<sup>3</sup>/ : 9.6...10.2  
 100 s: (9.2...10.6)  
 Spread cm<sup>3</sup> : 1.0  
 100 s: (1.4)  
 3rd speed rpm : 500  
 Rack travel in mm : <6.60  
 Del.quantity cm<sup>3</sup>/ : - \*\*  
 100 s: (-)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1500  
 Aneroid pressure h: 900  
 Del.quantity : 239.0...242.0  
 1000 : (235.5...245.5)  
 Spread cm<sup>3</sup> : 6.00  
 1000 : (10.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 96...104

Testing:

1st rack travel in: 11.50  
Speed rpm : 1540...1550  
2nd rack travel in: 4.00  
Speed rpm : 1650...1680  
3rd rack travel in: 4.00  
Speed rpm : 1665...1695  
4th rack travel in: 1750  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 68...76  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.4  
Speed rpm : 350  
Rack travel in mm : 6.80...7.00  
Rack travel in mm : 2.00  
Speed rpm : 525...585

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1500  
Rack travel in m: 12.50...12.60  
2nd speed rpm : 600  
Rack travel in m: 12.50...12.70  
3rd speed rpm : 400  
Rack travel in m: 13.70...14.30

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 12.50...12.60

Measurement

Speed 1/min : 600  
1st pressure hPa : -  
Rack travel in m: 11.50...11.60  
2nd pressure hPa : 300  
Rack travel in m: 11.90...12.00

FUEL DELIVERY CHARACTERISTICS

1st version

1000 s: 80.00)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 197.0...200.0  
1000 s: (193.5...203.5)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.50  
Speed rpm : 1540...1550

HIGH IDLE

1st version  
Speed rpm : 500  
Rack travel in mm : <6.60  
Del.quantity cm3/ : - \*\*  
1000 s: (-)

2nd version  
Speed rpm : 500  
Rack travel in mm : <7.1  
Del.quantity cm3/ : <50.0  
1000 s: (-)

3rd version  
Speed rpm : 500  
Rack travel in mm : 7.70...7.90  
Del.quantity cm3/ : 80.0  
1000 s: (-)

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.70...7.10  
Del.quantity cm3/ : 20.0...26.0 \*  
1000 s: (-)

Remarks:

\* applies to cylinders 2, 4 and 6  
\*\* applies for cylinders 1, 3 and 5

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 f1  
 Edition : 16.02.90  
 Replaces : 7.7.89  
 Test oil : ISO-4113

Combination no. : 0 401 876 338

Injection pump  
 Pump designation : PE6P120A32ORS415-1  
 EP type number : 0 411 826 123  
 Governor  
 Governor design. : RSV250...1100P5A508-  
 9  
 Govenor no. : 0 421 833 321

Customer-spec. information  
 Customer : DAF

Engine : KS 238

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 650

---

Rack travel in mm : 11.90...12.00

---

Del.quantity cm3/ : 18.8...19.0  
 100 s: (18.5...19.3)

---

Spread cm3 : 0.5  
 100 s: (0.9)

---

2nd speed rpm : 250.0  
 Rack travel in mm : 6.6...6.8  
 Del.quantity cm3/ : 1.7...2.3  
 100 s: (1.4...2.6)

Spread cm3 : 0.8  
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 650  
 Aneroid pressure h: 700  
 Del.quantity : 188.0...190.0  
 1000 : (185.0...193.0)

Spread cm3 : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 99...107

Testing:  
 1st rack travel in: 10.00  
 Speed rpm : 1130...1140  
 2nd rack travel in: 4.00  
 Speed rpm : 1185...1215

3rd rack travel in: 4.00  
Speed rpm : 1225...1255  
4th rack travel in: 1400  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 70...78  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6.0

#### Testing:

Speed rpm : 100  
Speed rpm : 250  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.00  
Speed rpm : 600...700

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1090  
Rack travel in m: 11.00...11.20  
2nd speed rpm : 650  
Rack travel in m: 12.20...12.30  
3rd speed rpm : 760  
Rack travel in m: 11.60...11.80  
4th speed rpm : 810  
Rack travel in m: 11.20...11.40

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 11.90...12.00

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 9.70...9.90  
2nd pressure hPa : 300  
Rack travel in m: 11.30...11.40  
3rd pressure hPa : 230  
Rack travel in m: 10.40...10.70

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 1090  
Del.quantity cm<sup>3</sup>/ : 180.0...184.0  
1000 s: (177.0...187.0)  
Aneroid pressure h: -  
Speed rpm : 600

Del.quantity cm<sup>3</sup>/ : 131.0...133.0  
1000 s: (128.0...136.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.00  
Speed rpm : 1130...1140

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 305.0...345.0  
1000 s: (301.0...349.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.40...6.60

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 10,1 g1  
 Edition : 05.03.90  
 Replaces : 1.12.89  
 Test oil : ISO-4113

Combination no. : 0 401 876 339

Injection pump  
 Pump designation : PE6P110A820LS513-1  
 EP type number : 0 411 816 177  
 Governor  
 Governor design. : RSV250...1000POA532-1  
 Governor no. : 0 421 833 331

Customer-spec. information  
 Customer : ENASA

Engine : 95T1B0.MR4

1st version kW : 176.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

---

Rack travel in mm : 13.20...13.30

---

Del.quantity cm<sup>3</sup>/ : 18.8...19.0  
 100 s: (18.5...19.3)

---

Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

2nd speed rpm : 250.0  
 Rack travel in mm : 6.5...6.7  
 Del.quantity cm<sup>3</sup>/ : 1.8...2.2  
 100 s: (1.5...2.4)

Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Del.quantity : 188.0...190.0  
 1000 : (185.0...193.0)

Spread cm<sup>3</sup> : 4.00  
 1000 : (7.50)

RATED SPEED

1st version  
 Control lever  
 position degrees: 86...94

Testing:  
 1st rack travel in: 12.20  
 Speed rpm : 1040...1050  
 2nd rack travel in: 4.00



Speed rpm : 1085...1115  
3rd rack travel in: 4.00  
Speed rpm : 1085...1115  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 63...71  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 330...390

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 13.20...13.30  
2nd speed rpm : 450  
Rack travel in m: 13.20...13.30  
3rd speed rpm : 300  
Rack travel in m: 14.40...15.00

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.20  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Remarks:

:

#### APPLICATION

Navy

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN 6,1 q 1  
 Edition : 05.03.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 340  
 Injection pump  
 Pump designation : PE6P110A320RS499  
 EP type number : 0 411 816 169  
 Governor  
 Governor design. : RSV325...1400POA374-  
 9  
 Governor no. : 0 421 833 335

Customer-spec. information  
 Customer : PENTA

Engine : TAMD61

1st version kW : 221.0  
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.40...2.50  
 : (2.35...2.55)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.10...11.20

Del.quantity cm<sup>3</sup>/ : 11.9...12.1

100 s: (11.6...12.4)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 325.0

Rack travel in mm : 4.1...4.3

Del.quantity cm<sup>3</sup>/ : 1.1...1.5

100 s: (0.9...1.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 900

Del.quantity : 119.0...121.0

1000 : (116.0...124.0)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control Lever

position degrees: 120...128

Testing:

1st rack travel in: 10.10

Speed rpm : 1450...1460

2nd rack travel in: 4.00  
Speed rpm : 1535...1565  
4th rack travel in: 1630  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control Lever  
position degrees: 83...91  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 3.7  
Speed rpm : 325  
Rack travel in mm : 4.10...4.30  
Rack travel in mm : 2.00  
Speed rpm : 450...510

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 11.00...11.20

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.50...8.70  
2nd pressure hPa : 690  
Rack travel in m: 10.80...10.90  
3rd pressure hPa : 400  
Rack travel in m: 8.90...10.10

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 1400  
Del.quantity cm3/ : 121.0...125.0  
1000 s: (118.0...128.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 55.0...57.0  
1000 s: (52.0...60.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 10.10  
Speed rpm : 1450...1460

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...165.0  
1000 s: (131.0...169.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.10...4.30  
Del.quantity cm3/ : 11.0...15.0  
1000 s: (9.0...17.0)  
Spread cm3 : 3.00  
1000 s: (6.00)

Remarks:

#### APPLICATION

Navy

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN 7,1 c 3  
 Edition : 15.03.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 744  
 Injection pump  
 Pump designation : PE6P110A32ORS3147  
 EP type number : 0 411 816 743  
 Governor  
 Governor design. : RSV650...750P4A421-2  
 Governer no. : 0 421 833 336

Customer-spec. information  
 Customer : PENTA

Engine : TD71AG

1st version kW : 127.0  
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700  
 Rack travel in mm : 10.70...10.80  
 Del.quantity cm<sup>3</sup>/ : 14.0...14.2  
 100 s: (13.7...14.5)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

2nd speed rpm : 650.0  
 Rack travel in mm : 4.1...4.3  
 Del.quantity cm<sup>3</sup>/ : 1.7...2.1  
 100 s: (1.4...2.3)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (0.9)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
 Click setting x : 5.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Del.quantity : 140.0...142.0  
 1000 : (137.0...145.0)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (7.50)

RATED SPEED

1st version  
 Control lever  
 position degrees: 93...101

Testing:  
 1st rack travel in: 9.70  
 Speed rpm : 742...747  
 2nd rack travel in: 4.00  
 Speed rpm : 771...784

4th rack travel in: 940  
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever  
position degrees: 87...95  
Setting point w/out bumper spring  
Speed rpm : 650  
Rack travel in mm : 4.2  
Speed rpm : 650  
Rack travel in mm : 4.10...4.30  
Rack travel in mm : 2.00  
Speed rpm : 635...695

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 155.0...175.0  
1000 s: (151.0...179.0)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 650  
Rack travel in mm : 4.10...4.30  
Del.quantity cm<sup>3</sup>/ : 17.0...21.0  
1000 s: (14.5...23.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (9.00)

Remarks:

:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,0 k 6  
 Edition : 15.03.90  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 401 876 759

Injection pump  
 Pump designation : PE6P110A320LS3814-11  
 EP type number : 0 411 816 756  
 Governor  
 Governor design. : RSV350...1050POA531-1  
 Governor no. : 0 421 833 271

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM421

1st version kW : 148.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness : 6.00X1.50X600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-45-120-165-240-285  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1030  


---

 Rack travel in mm : 12.20...12.30  


---

 Del.quantity cm<sup>3</sup>/ : 13.0...13.2  
 100 s: (12.7...13.4)  


---

 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.8)

2nd speed rpm : 350.0  
 Rack travel in mm : 8.2...8.4  
 Del.quantity cm<sup>3</sup>/ : 1.3...1.9  
 100 s: (1.0...2.1)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
 Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1030  
 Del.quantity : 130.0...132.0  
 1000 : (127.5...134.5)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (8.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 86...94

Testing:

1st rack travel in: 11.10  
Speed rpm : 1065...1075  
2nd rack travel in: 4.00  
Speed rpm : 1130...1150  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 64...72  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 8.3  
Speed rpm : 350  
Rack travel in mm : 8.20...8.40

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 112.0...116.0  
1000 s: (109.0...119.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.10  
Speed rpm : 1065...1075

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

Observe VDT-I-420/120

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,2 c  
 Edition : 05.03.90  
 Replaces : 2.10.89  
 Test oil : ISO-4113

Combination no. : 0 401 876 769

Injection pump  
 Pump designation : PE6P120A32ORS3206-2  
 EP type number : 0 411 826 784  
 Governor  
 Governor design. : RSV25D..1300POA374-8  
 Governor no. : 0 421 833 320

Customer-spec. information  
 Customer : VOLVO-TRUCK

Engine : TAMD71A PD

1st version kw : 280.0  
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 10.10...10.20

Del.quantity cm<sup>3</sup>/ : 21.5...21.7

100 s: (21.2...22.0)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.1...5.3

Del.quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.40

Governor spring pre-tension

Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 215.5...217.5

1000 : (212.5...220.5)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 110...118

Testing:



1st rack travel in: 0.10  
Speed rpm : 1335...1345  
2nd rack travel in: 4.00  
Speed rpm : 1415...1445  
3rd rack travel in: 4.00  
Speed rpm : 1425...1455  
4th rack travel in: 1530  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 76...84  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 4.7  
Speed rpm : 250  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 450...510

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 10.10...10.20

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 7.10...7.30  
2nd pressure hPa : 360  
Rack travel in m: 7.50...7.60  
3rd pressure hPa : 780  
Rack travel in m: 9.70...9.90

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 135.5...137.5  
1000 s: (132.5...140.5)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 9.10  
Speed rpm : 1335...1345

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 7.10...7.30

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.10...5.30  
Del.quantity cm<sup>3</sup>/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE 12,0 a  
 Edition : 16.02.90  
 Replaces : 13.12.89  
 Test oil : ISO-4113

Combination no. : 0 401 876 770

Injection pump  
 Pump designation : PE6P110A320LS3852  
 EP type number : 0 411 816 768  
 Governor  
 Governor design. : RSV400...900P1A544  
 Governor no. : 0 421 833 326

Customer-spec. information  
 Customer : LIEBHERR

Engine : D 9306TB

1st version kW : 132.0  
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90  
 : (3.75...3.95)  
 Rack travel in mm : 9.00...12.00

L27

Firing order : 1- 6- 3- 5- 2- 4

Phasing : 0-75-120-195-240-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 890

---

Rack travel in mm : 11.70...11.80

---

Del.quantity cm3/ : 13.8...14.1

---

100 s: (13.5...14.3)

---

Spread cm3 : 0.4

---

100 s: (0.7)

---

2nd speed rpm : 400.0  
 Rack travel in mm : 5.8...6.0  
 Del.quantity cm3/ : 1.3...1.8  
 100 s: (1.0...2.0)  
 Spread cm3 : 0.4  
 100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 890  
 Del.quantity : 138.0...141.0  
 1000 : (135.5...143.5)  
 Spread cm3 : 4.00  
 1000 : (7.50)

RATED SPEED

1st version  
 Control lever  
 position degrees: 88...96

Testing:  
 1st rack travel in: 10.70  
 Speed rpm : 930...940  
 2nd rack travel in: 4.00  
 Speed rpm : 945...975

3rd rack travel in: 4.00  
Speed rpm : 950...980  
4th rack travel in: 1120  
Speed rpm : 0.30...1.40

Remarks:

#### LOW IDLE 1

Control lever  
position degrees: 66...74  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.4  
Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 450...510

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 890  
Rack travel in m: 11.70...11.80  
2nd speed rpm : 500  
Rack travel in m: 11.70...11.90  
3rd speed rpm : 420  
Rack travel in m: 12.90...13.50

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 140.0...144.0  
1000 s: (137.0...147.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.70  
Speed rpm : 930...940

#### INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (146.0...174.0)

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Del.quantity cm<sup>3</sup>/ : 13.0...18.0  
1000 s: (10.5...20.5)  
Spread cm<sup>3</sup> : 4.50  
1000 s: (7.50)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 q14  
 Edition : 04.05.90  
 Replaces : -  
 Test oil : ISO-4113  
  
 Combination no. : 0 401 876 773  
  
 Injection pump  
 Pump designation : PE6P120A320LS3815-13  
 EP type number : 0 411 826 782  
 Governor  
 Governor design. : RSV750...1050POA820-10  
 Governor no. : 0 421 833 339

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM441A

1st version kW : 191.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70  
 : (3.55...3.75)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1030

Rack travel in mm : 11.50...11.60

Del.quantity cm<sup>3</sup>/ : 18.5...18.7

100 s: (18.2...19.0)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 750.0

Rack travel in mm : 3.2...3.6

Del.quantity cm<sup>3</sup>/ : 2.4...3.2

100 s: (2.1...3.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1030

Del.quantity : 185.0...187.0

1000 : (182.0...190.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 87...95

Testing:

1st rack travel in: 10.50  
Speed rpm : 1060...1070  
2nd rack travel in: 4.00  
Speed rpm : 1090...1108  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 73...81  
Setting point w/out bumper spring  
Speed rpm : 750  
Rack travel in mm : 3.4

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 750  
Rack travel in mm : 3.20...3.60  
Rack travel in mm : 2.00  
Speed rpm : 755...815

#### SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 900  
Del.quantity cm3/ : 188.0...192.0  
1000 s: (185.0...195.0)  
Spread cm3 : 8.00  
1000 s: (12.)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.50  
Speed rpm : 1060...0

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 190.0...210.0  
1000 s: (186.0...214.0)

Remarks:

:

#### APPLICATION

Combine-harvester

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,6 t 1  
 Edition : 06.04.90  
 Replaces : 15.8.89  
 Test oil : ISO-4113

Combination no. : 0 401 878 706

Injection pump  
 Pump designation : PE8P110A320LS3813-10  
 EP type number : 0 411 818 712  
 Governor  
 Governor design. : RSV350...75QPOA824-2  
 Governor no. : 0 421 833 228

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM422

1st version kw : 173.0  
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness : 6.00X1.50X600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 700

---

Rack travel in mm : 13.10...13.20

---

Del.quantity cm<sup>3</sup>/ : 14.2...14.4  
 100 s: (13.9...14.6)

---

Spread cm<sup>3</sup> : 0.4  
 100 s: (0.8)

---

2nd speed rpm : 350.0  
 Rack travel in mm : 7.2...7.5  
 Del.quantity cm<sup>3</sup>/ : 1.4...1.8  
 100 s: (1.1...2.0)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...1.40

Governor spring pre-tension  
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Del.quantity : 142.0...144.0  
 1000 : (139.5...146.5)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (8.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 26...34

Testing:

1st rack travel in: 12.10  
Speed rpm : 750...755  
2nd rack travel in: 4.00  
Speed rpm : 780...793  
4th rack travel in: 1200  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 12...20  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 7.3

Testing:  
Speed rpm : 100  
Minimum rack trave: 13.00  
Speed rpm : 350  
Rack travel in mm : 7.20...7.50

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.70  
Speed rpm : 1175...1185

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

:

Observe VDT-I-420/120

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,6 p 3  
 Edition : 02.02.90  
 Replaces : 16.5.88  
 Test oil : ISO-4113

Combination no. : 0 401 878 707

Injection pump  
 Pump designation : PE8P120A32OLS3816-10  
 EP type number : 0 411 828 715  
 Governor  
 Governor design. : RSV350..750POA824-3  
 Governor no. : 0 421 833 229

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM422A

1st version kW : 227.0  
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)

Rack travel in mm : 9.00...12.00

Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 700

---

Rack travel in mm : 12.10...12.20

---

Del.quantity cm<sup>3</sup>/ : 18.4...18.6  
 100 s: (18.1...18.9)

---

Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

---

2nd speed rpm : 350.0  
 Rack travel in mm : 5.3...5.6  
 Del.quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)

---

Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
 Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Del.quantity : 184.0...186.0  
 1000 : (181.0...189.0)

Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version



Control lever  
position degrees: 26...30

Testing:

1st rack travel in: 8.30  
Speed rpm : 1210...1220  
2nd rack travel in: 4.00  
Speed rpm : 1235...1250  
4th rack travel in: 1.40  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 12...20  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.4

Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 350  
Rack travel in mm : 5.30...5.60

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1180  
Rack travel in m: 9.30...9.40  
2nd speed rpm : 975  
Rack travel in m: 10.10...10.20  
3rd speed rpm : 1075  
Rack travel in m: 9.60...9.80

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.30  
Speed rpm : 1210...1220

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 170.0...190.0  
1000 s: (166.0...194.0)

Remarks:

Observe VDT-I-420/120

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE 16,0 a  
 Edition : 16.02.90  
 Replaces : 13.12.89  
 Test oil : ISO-4113

Combination no. : 0 401 878 714

Injection pump  
 Pump designation : PE8P110A520/4LS3853  
 EP type number : 0 411 818 720  
 Governor  
 Governor design. : RSV400...900P1A544  
 Governor no. : 0 421 833 326

Customer-spec. information  
 Customer : LIEBHERR

Engine : D 9308 T

1st version kW : 260.0  
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90  
 : (3.75...3.95)  
 Rack travel in mm : 9.00...12 00

M07

Firing order : 1- 8- 7- 2- 6- 3-  
 5- 4

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 890

Rack travel in mm : 13.80...13.90

Del.quantity cm3/ : 17.5...17.8

100 s: (17.2...18.0)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 400.0

Rack travel in mm : 5.8...6.0

Del.quantity cm3/ : 1.3...1.8

100 s: (1.0...2.0)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 890

Del.quantity : 175.0...178.0

1000 : (172.5...180.5)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 87...95

Testing:

1st rack travel in: 12.80

Speed rpm : 930...940

2nd rack travel in: 4.00

Speed rpm : 945...975  
3rd rack travel in: 4.00  
Speed rpm : 950...980  
4th rack travel in: 1120  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 64...72  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.4

Testing:  
Speed rpm : 100  
Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 450...510

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 890  
Rack travel in m: 13.80...13.90  
2nd speed rpm : 500  
Rack travel in m: 13.80...14.00  
3rd speed rpm : 420  
Rack travel in m: 15.00...15.60

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 500  
Del.quantity cm3/ : 176.0...184.0  
1000 s: (173.0...187.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.80  
Speed rpm : 930...940

INTERMEDIATE RATED SPEED  
Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 150.0...170.0  
1000 s: (146.0...174.0)

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.80...6.00

Del.quantity cm3/ : 13.0...18.0  
1000 s: (10.5...20.5)  
Spread cm3 : 4.50  
1000 s: (7.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 s  
 Edition : 02.05.90  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 401 878 715

Injection pump  
 Pump designation : PE8P110A320LS3842-2  
 EP type number : 0 411 818 722  
 Governor  
 Governor design. : RSV650...1200POA820-  
 7

Governer no. : 0 421 833 341

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442

1st version kW : 213.0  
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 Phasing : 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1030  


---

 Rack travel in mm : 12.90...13.00  


---

 Del.quantity cm<sup>3</sup>/ : 13.7...13.9  
 100 s: (13.4...14.1)  


---

 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.8)

2nd speed rpm : 350.0  
 Rack travel in mm : 5.5...6.0  
 Del.quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.4)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1030  
 Del.quantity : 137.0...139.0  
 1000 : (134.5...141.5)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (8.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 86...94

Testing:  
 1st rack travel in: 12.30  
 Speed rpm : 1090...1100

2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 14.00  
Speed rpm : 0.30...1.70

LOW IDLE 1  
Control lever  
position degrees: 68...72  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.7

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 350  
Rack travel in mm : 5.50...6.00  
Rack travel in mm : 2.00  
Speed rpm : 350...370

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 128.0...132.0  
1000 s: (125.0...135.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (9.00)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.30  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:  
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 18,3 j 1  
 Edition : 16.02.90  
 Replaces : 12.9.86  
 Test oil : ISO-4113  
 Combination no. : 0 401 879 702  
 Injection pump  
 Pump designation : PE10P120A320LS3831  
 EP type number : 0 411 829 705  
 Governor  
 Governor design. : RSV350...750POA824-9  
 Governor no. : 0 421 833 235

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM 423 LA

1st version kW : 309.0  
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 130...150

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 10- 9- 4- 1- 8- 7  
 - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
 216-261-288-333

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.70...11.80

Del. quantity cm<sup>3</sup>/ : 19.0...19.2

100 s: (18.7...19.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.8)

2nd speed rpm : 350.0

Rack travel in mm : 4.8...5.0

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del. quantity : 190.0...192.0

1000 : (187.0...195.0)

Spread cm<sup>3</sup> : 5.00

1000 : (8.00)

RATED SPEED

1st version

Control lever  
position degrees: 24...32

Testing:

1st rack travel in: 10.70  
Speed rpm : 750...755  
2nd rack travel in: 4.00  
Speed rpm : 775...788  
4th rack travel in: 900  
Speed rpm : 0.30...1.70

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 4.9  
Speed rpm : 350  
Rack travel in mm : 4.80...5.00

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.40  
Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 170.0...190.0  
1000 s: (166.0...194.0)

Remarks:

:  
Observe VDT-I-420/120

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 18,3 q  
 Edition : 06.04.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 879 707  
 Injection pump  
 Pump designation : PE10P110A320LS3856  
 EP type number : 0 411 819 711  
 Governor  
 Governor design. : RSV675...1050POA823-  
 8  
 Governor no. : 0 421 833 338

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM 443

1st version kW : 242.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 130...150

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 10- 9- 4- 1- 8- 7  
 - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
 Phasing : 216-261-288-333  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm : 1030  
 Rack travel in mm : 12.20...12.30  
 Del.quantity cm<sup>3</sup>/ : 12.3...12.5  
 100 s: (12.0...12.7)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.8)

2nd speed rpm : 675.0  
 Rack travel in mm : 5.4...5.7  
 Del.quantity cm<sup>3</sup>/ : 1.2...2.0  
 100 s: (0.9...2.2)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
 Click setting x : 7.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1030  
 Del.quantity : 123.0...125.0  
 1000 : (120.5...127.5)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (8.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 80...88



Testing:

1st rack travel in: 11.20  
Speed rpm : 1165...1175  
2nd rack travel in: 4.00  
Speed rpm : 1210...1225  
4th rack travel in: 1200  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 66...74  
Setting point w/out bumper spring  
Speed rpm : 675  
Rack travel in mm : 5.5

Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 675  
Rack travel in mm : 5.40...5.70  
Rack travel in mm : 2.00

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 109.0...113.0  
1000 s: (106.0...116.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (9.)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20  
Speed rpm : 1165...1175

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 18,3 q 1  
 Edition : 05.03.90  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 401 879 707

Injection pump  
 Pump designation : PE10P110A320LS3856  
 EP type number : 0 411 819 711  
 Governor  
 Governor design. : RSV750...1050POA823-  
 8

Governer no. : 0 421 833 338

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM 423

1st version kW : 242.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 130...150

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 10- 9- 4- 1- 8- 7  
 - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
 Phasing : 216-261-288-333  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm : 1030  


---

 Rack travel in mm : 11.70...11.80  


---

 Del.quantity cm<sup>3</sup>/ : 12.5...12.7  
 100 s: (12.2...12.9)  


---

 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.8)

2nd speed rpm : 750.0  
 Rack travel in mm : 5.5...5.8  
 Del.quantity cm<sup>3</sup>/ : 1.2...2.0  
 100 s: (0.9...2.2)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1030  
 Del.quantity : 125.0...127.0  
 1000 : (122.5...129.5)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (8.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 36...44

Testing:  
 1st rack travel in: 12.20  
 Speed rpm : 1165...1175

2nd rack travel in: 4.00  
Speed rpm : 1210...1225  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 22...30  
Setting point w/out bumper spring  
Speed rpm : 750  
Rack travel in mm : 5.6

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 750  
Rack travel in mm : 5.50...5.80  
Rack travel in mm : 2.00

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del.quantity cm3/ : 112.0...116.0  
1000 s: (109.0...119.0)  
Spread cm3 : 6.00  
1000 s: (9.00)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.20  
Speed rpm : 1165...1175

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:  
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9a15  
 Edition : 31.07.87  
 Replaces : 12.9.86  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 043  
 Injection pump  
 Pump designation : PES6P120A720/3LS470-  
 2  
 EP type number : 0 412 026 050  
 Governor  
 Governor design. : RQ300/1100PA658-18  
 Governor no. : 0 421 801 322

Customer-spec. information  
 Customer : MAN

Engine : D2866LFZ/290

1st version kW : 213.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 10.30...10.40

Del.quantity cm<sup>3</sup>/ : 18.3...18.5

100 s: (18.0...18.8)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.8...5.0

Del.quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del.quantity : 183.0...185.0

1000 : (180.0...188.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 8.70  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.9

#### Testing:

Speed rpm : 100  
Minimum rack trave: 6.40  
Speed rpm : 300  
Rack travel in mm : 4.80...5.00  
Rack travel in mm : 2.00  
Speed rpm : 340...380

#### TORQUE CONTROL

Dimension a mm : 0.40  
Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 10.60...10.70  
2nd speed rpm : 1100  
Rack travel in m: 9.70...9.80  
3rd speed rpm : 875  
Rack travel in m: 10.40...10.60  
4th speed rpm : 950  
Rack travel in m: 9.90...10.20

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 10.30...10.40

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.10  
2nd pressure hPa : 85  
Rack travel in m: 9.30...9.40  
3rd pressure hPa : 160  
Rack travel in m: 9.80...10.20

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

M18

Aneroid pressure h: 1000  
Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 178.0...182.0  
1000 s: (175.0...185.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 174.0...180.0  
1000 s: (171.0...183.0)  
Aneroid pressure h: 160  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 157.0...169.0  
1000 s: (154.0...172.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 132.0...134.0  
1000 s: (129.0...137.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 8.70  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.80...5.00  
Del.quantity cm<sup>3</sup>/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7713

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9a41
Edition : 15.12.89
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 036 044
Injection pump
Pump designation : PES6P120A720/3LS470-2
EP type number : 0 412 026 050
Governor
Governor design. : RQ300/1100PA658-19
Governor no. : 0 421 801 323

Customer-spec. information
Customer : MAN

Engine : D2866LFZ

1st version kw : 243.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90
: (2.75...2.95)

Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 11.30...11.40

Del.quantity cm3/ : 20.7...20.9

100 s : (20.4...21.2)

Spread cm3 : 0.5

100 s : (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.6...4.8

Del.quantity cm3/ : 1.2...1.8

100 s : (0.9...2.1)

Spread cm3 : 0.8

100 s : (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del.quantity : 207.0...209.0

1000 : (204.0...212.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.50

Speed rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1185...1215  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.7

#### Testing:

Speed rpm : 100  
Minimum rack trave: 6.20  
Speed rpm : 300  
Rack travel in mm : 4.60...4.80  
Rack travel in mm : 2.00  
Speed rpm : 340...380

#### TORQUE CONTROL

Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.70...11.80  
2nd speed rpm : 750  
Rack travel in m: 11.90...12.20  
3rd speed rpm : 875  
Rack travel in m: 11.80...12.00  
4th speed rpm : 950  
Rack travel in m: 11.20...11.50

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 11.30...11.40

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.10  
2nd pressure hPa : 85  
Rack travel in m: 9.30...9.40  
3rd pressure hPa : 280  
Rack travel in m: 10.50...10.90

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1100

Del.quantity cm3/ : 203.0...207.0  
1000 s: (200.0...210.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm3/ : 208.0...214.0  
1000 s: (205.0...217.0)  
Aneroid pressure h: 280  
Speed rpm : 500  
Del.quantity cm3/ : 184.0...196.0  
1000 s: (181.0...199.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 9.50  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.60...4.80  
Del.quantity cm3/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7756

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 j  
 Edition : 23.03.90  
 Replaces : 11.5.89  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 726  
 Injection pump  
 Pump designation : PES6P120A720/3LS3205  
 EP type number : 0 412 026 729  
 Governor  
 Governor design. : RQ300/1100PA813-2  
 Governor no. : 0 421 801 416

Customer-spec. information  
 Customer : MAN

Engine : D2866LX

1st version kW : 265.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.30...13.40

Del. quantity cm<sup>3</sup>/ : 24.2...24.4

100 s: (23.9...24.7)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.1...4.3

Del. quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del. quantity : 242.0...244.0

1000 : (239.0...247.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.00



Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.2

#### Testing:

Speed rpm : 100  
Minimum rack travel: 5.70  
Speed rpm : 300  
Rack travel in mm : 4.10...4.30  
Rack travel in mm : 2.00  
Speed rpm : 330...370

#### TORQUE CONTROL

Dimension a mm : 0.20  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 13.00...13.10  
2nd speed rpm : 700  
Rack travel in m: 13.50...13.70

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 13.30...13.40

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.80...10.00  
2nd pressure hPa : 110  
Rack travel in m: 10.20...10.30  
3rd pressure hPa : 470  
Rack travel in m: 11.90...12.30

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 230.0...236.0  
1000 s: (227.0...239.0)  
Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 134.0...136.0  
1000 s: (131.0...139.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.00  
Speed rpm : 1145...1160

INTERMEDIATE RATED SPEED  
Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 210.0...230.0  
1000 s: (206.0...234.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.10...4.30  
Del.quantity cm<sup>3</sup>/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7889

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 k3
Edition : 23.03.90
Replaces : 15.8.89
Test oil : ISO-4113
Combination no. : 0 402 036 727
Injection pump
Pump designation : PES6P120A720/3LS3205
EP type number : 0 412 026 729
Governor
Governor design. : RQV300...1100PA876-1
Governor no. : 0 421 813 670

Customer-spec. information
Customer : MAN

Engine : D2866LX

1st version kw : 265.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80
: (3.65...3.85)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.30...13.40

Del.quantity cm3/ : 24.2...24.4

100 s: (23.9...24.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.1...4.3

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.10...1.30

2nd speed rpm : 450

travel mm : 3.10...3.50

3rd speed rpm : 900

travel mm : 6.00...6.40

4th speed rpm : 1100

travel mm : 7.70...7.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1175

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 242.0...244.0

1000 : (239.0...247.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 116...124

Testing:  
1st rack travel in: 12.00  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1250...1280  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 79...87

Testing:  
Speed rpm : 100  
Minimum rack travel: 5.70  
Speed rpm : 300  
Rack travel in mm : 4.10...4.30

CONSTANT REGULATION  
Speed rpm : 300...400

TORQUE CONTROL  
Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 13.00...13.10  
2nd speed rpm : 700  
Rack travel in m: 13.30...13.40  
3rd speed rpm : 1000  
Rack travel in m: 13.10...13.20

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 13.30...13.40

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.80...10.00  
2nd pressure hPa : 110  
Rack travel in m: 10.20...10.30  
3rd pressure hPa : 470  
Rack travel in m: 11.90...12.30

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 231.0...235.0  
1000 s: (228.0...238.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 134.0...136.0  
1000 s: (131.0...139.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.00  
Speed rpm : 1140...1150

INTERMEDIATE RATED SPEED  
Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 190.0...210.0  
1000 s: (186.0...214.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.10...4.30  
Del.quantity cm<sup>3</sup>/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks: : MAN-NR. 2-7890

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 j2  
 Edition : 30.03.90  
 Replaces : 14.7.89  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 729  
 Injection pump  
 Pump designation : PES6P120A720/3LS3205  
 EP type number : 0 412 026 729  
 Governor  
 Governor design. : RQ300/1100PA813-7  
 Governor no. : 0 421 801 474

Customer-spec. information  
 Customer : MAN

Engine : D2866LXUH

1st version kW : 273.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.50...13.60

Del.quantity cm<sup>3</sup>/ : 24.2...24.4

100 s: (23.9...24.7)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.3...4.5

Del.quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 14.70...16.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 242.0...244.0

1000 : (239.0...247.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 15.5

Testing:

1st rack travel in: 12.00

Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.4

#### Testing:

Speed rpm : 100  
Minimum rack travel: 5.90  
Speed rpm : 300  
Rack travel in mm : 4.30...4.50  
Rack travel in mm : 2.00  
Speed rpm : 380...420

#### TORQUE CONTROL

Dimension a mm : 0.20  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 13.00...13.10  
2nd speed rpm : 700  
Rack travel in m: 14.30...14.40  
3rd speed rpm : 885  
Rack travel in m: 13.60...13.90  
4th speed rpm : 935  
Rack travel in m: 13.30...13.60

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 13.50...13.60

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.30...9.50  
2nd pressure hPa : 190  
Rack travel in m: 9.70...9.80  
3rd pressure hPa : 520  
Rack travel in m: 11.80...12.10

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200

Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 230.0...236.0  
1000 s: (227.0...239.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 120.0...122.0  
1000 s: (117.0...125.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 12.00  
Speed rpm : 1145...1160

#### INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 230.0...250.0  
1000 s: (226.0...254.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.30...4.50  
Del.quantity cm<sup>3</sup>/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7946

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 k2  
 Edition : 16.02.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 731  
 Injection pump  
 Pump designation : PES6P120A720/3LS3205  
 EP type number : 0 412 026 729  
 Governor  
 Governor design. : RQV300...950PA876-3  
 Governor no. : 0 421 313 807

Customer-spec. information

Customer : MAN  
 Engine : D2866LXF/339  
 1st version kW : 250.0  
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 067  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700  


---

 Rack travel in mm : 12.90...13.00  


---

 Del. quantity cm<sup>3</sup>/ : 23.0... 23.2  
 100 s : (22.7...23.5)  


---

 Spread cm<sup>3</sup> : 0.5  
 100 s : (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 4.1...4.3  
 Del. quantity cm<sup>3</sup>/ : 1.7...2.3  
 100 s : (1.4...2.6)  
 Spread cm<sup>3</sup> : 0.8  
 100 s : (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.00...1.40  
 2nd speed rpm : 800  
 travel mm : 5.00...5.40  
 3rd speed rpm : 1000  
 travel mm : 7.80...8.20  
 4th speed rpm : 1100  
 travel mm : 9.10...9.60

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1050  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Aneroid pressure h: 1200  
 Del. quantity : 230.0...232.0  
 1000 : (227.0...235.0)

Spread      cm<sup>3</sup> : 5.00  
            1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
  position degrees: 295...301

Testing:  
1st rack travel in: 11.70  
  Speed      rpm : 990...1000  
2nd rack travel in: 4.00  
  Speed      rpm : 1070...1100  
4th rack travel in: 1150  
  Speed      rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
  position degrees: 258...266

Testing:  
Speed      rpm : 200  
Minimum rack trave: 6.00  
Speed      rpm : 300  
Rack travel in mm : 4.10...4.30

#### CONSTANT REGULATION

Speed      rpm : 300...400

#### TORQUE CONTROL

Dimension a mm : 0.20  
Torque control curve - 1st version  
1st speed rpm : 950  
  Rack travel in m: 12.70...12.80  
2nd speed rpm : 700  
  Rack travel in m: 12.90...13.20

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed      rpm : 500  
Pressure    hPa : 1200  
Rack travel mm : 12.90...13.00

#### Measurement

Speed      1/min : 500

1st pressure hPa : -  
  Rack travel in m: 9.80...10.00  
2nd pressure hPa : 110  
  Rack travel in m: 10.20...10.30  
3rd pressure hPa : 470  
  Rack travel in m: 11.90...12.30

#### START CUT-OUT

Speed      1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed      rpm : 950  
Del.quantity cm<sup>3</sup>/ : 228.0...232.0  
            1000 s: (225.0...235.0)  
Aneroid pressure h: -  
Speed      rpm : 500  
Del.quantity cm<sup>3</sup>/ : 134.0...136.0  
            1000 s: (131.0...139.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

  full load rack tr: 11.70  
Speed      rpm : 990...1000

#### INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed      rpm : 100  
Del.quantity cm<sup>3</sup>/ : 210.0...230.0  
            1000 s: (206.0...234.0)

#### LOW IDLE

Speed      rpm : 300  
Rack travel in mm : 4.10...4.30  
Del.quantity cm<sup>3</sup>/ : 17.0...23.0  
            1000 s: (14.0...26.0)  
Spread      cm<sup>3</sup> : 8.00  
            1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7942

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 j3  
 Edition : 16.02.90  
 Replaces : 9.11.89  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 732  
 Injection pump  
 Pump designation : PES6P120A720/3LS3205  
 EP type number : 0 412 026 729  
 Governor  
 Governor design. : RQ300/950PA813-10  
 Governor no. : 0 421 801 493

Customer-spec. information  
 Customer : MAN

Engine : D2866LXF/339

1st version kW : 250.0  
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.90...13.00

Del.quantity cm<sup>3</sup>/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.1...4.3

Del.quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 230.0...232.0

1000 : (227.0...235.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.70



Speed rpm : 995...1010  
2nd rack travel in: 4.00  
Speed rpm : 1045...1075  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.2

#### Testing:

Speed rpm : 100  
Minimum rack travel: 5.70  
Speed rpm : 300  
Rack travel in mm : 4.10...4.30  
Rack travel in mm : 2.00  
Speed rpm : 350...390

#### TORQUE CONTROL

Dimension a mm : 0.20  
Torque control curve - 1st version  
1st speed rpm : 950  
Rack travel in m: 12.70...12.80  
2nd speed rpm : 700  
Rack travel in m: 13.20...13.40

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 12.90...13.00

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.80...10.00  
2nd pressure hPa : 110  
Rack travel in m: 10.20...10.30  
3rd pressure hPa : 470  
Rack travel in m: 11.90...12.30

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 228.0...232.0  
1000 s: (225.0...235.0)  
Aneroid pressure h: -

N02

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 134.0...136.0  
1000 s: (131.0...139.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.70  
Speed rpm : 995...1010

INTERMEDIATE RATED SPEED  
Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 210.0...230.0  
1000 s: (206.0...234.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.10...4.30  
Del.quantity cm<sup>3</sup>/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7962

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 p  
 Edition : 30.03.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 733  
 Injection pump  
 Pump designation : PES6P120A720/3LS3247  
 EP type number : 0 412 026 735  
 Governor  
 Governor design. : RQV300...1100PA876-4  
 Governor no. : 0 421 813 851

Customer-spec. information  
 Customer : MAN

Engine : D2866LXF/A00

1st version kW : 273.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)  
 Rack travel in mm : 14.50...15.50  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.50...13.60

Del.quantity cm<sup>3</sup>/ : 24.2...24.4

100 s: (23.9...24.7)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.2...4.6

Del.quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.00...1.40

2nd speed rpm : 500

travel mm : 2.90...3.50

3rd speed rpm : 800

travel mm : 5.10...5.50

4th speed rpm : 1100

travel mm : 7.70...7.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1135

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 242.0...244.0

1000 : (239.0...247.0)

Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 296...304

#### Testing:

1st rack travel in: 12.00  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1235...1265  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 258...266

#### Testing:

Speed rpm : 200  
Minimum rack travel: 5.90  
Speed rpm : 300  
Rack travel in mm : 4.30...4.50

#### CONSTANT REGULATION

Speed rpm : 320...430

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 13.50...13.60

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.50...9.70  
2nd pressure hPa : 110  
Rack travel in m: 9.80...10.00  
3rd pressure hPa : 470  
Rack travel in m: 11.60...12.00

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 1100

Del.quantity cm3/ : 230.0...236.0  
1000 s: (227.0...239.0)  
Speed rpm : 700  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 134.0...136.0  
1000 s: (131.0...139.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.00  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 190.0...210.0  
1000 s: (186.0...214.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.20...4.60  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7890

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 q  
 Edition : 30.03.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 734  
 Injection pump  
 Pump designation : PES6P120A720/3LS3247  
 EP type number : 0 412 026 735  
 Governor  
 Governor design. : RQ300/1100PA813-12  
 Governor no. : 0 421 801 518

Customer-spec. information  
 Customer : MAN

Engine : D2866LXF/A00

1st version kW : 273.0

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)  
 Rack travel in mm : 14.50...15.50  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.50...13.60

Del. quantity cm<sup>3</sup>/ : 24.2...24.4

100 s: (23.9...24.7)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.2...4.6

Del. quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del. quantity : 242.0...244.0

1000 : (239.0...247.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 12.00  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.4

Testing:  
Speed rpm : 200  
Minimum rack travel: 5.90  
Speed rpm : 300  
Rack travel in mm : 4.30...4.50

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 13.00...13.10  
2nd speed rpm : 700  
Rack travel in m: 13.70...13.90

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 13.50...13.60

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.50...9.70  
2nd pressure hPa : 110  
Rack travel in m: 9.80...10.00  
3rd pressure hPa : 470  
Rack travel in m: 11.60...12.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200

N06

Speed rpm : 1100  
Del.quantity cm3/ : 230.0...236.0  
1000 s: (227.0...239.0)  
Speed rpm : 700  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 134.0...136.0  
1000 s: (131.0...139.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.00  
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 190.0...210.0  
1000 s: (186.0...214.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.20...4.60  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks: : MAN-NR. 2-7889

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 r  
 Edition : 12.04.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 735  
 Injection pump  
 Pump designation : PES6P120A720/3LS3250  
 EP type number : 0 412 026 736  
 Governor  
 Governor design. : RQ300/1100PA813-2  
 Governor no. : 0 421 801 416

Customer-spec. information  
 Customer : MAN

Engine : D2866LX

1st version kW : 265.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 067  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700  
 Rack travel in mm : 13.30...13.40  
 Del.quantity cm<sup>3</sup>/ : 24.2...24.4  
 100 s : (23.9...24.7)  
 Spread cm<sup>3</sup> : 0.5  
 100 s : (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 4.1...4.3  
 Del.quantity cm<sup>3</sup>/ : 1.7...2.3  
 100 s : (1.4...2.6)  
 Spread cm<sup>3</sup> : 0.8  
 100 s : (1.2)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2  
 Speed rpm : 650  
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Aneroid pressure h: 1200  
 Del.quantity : 242.0...244.0  
 1000 : (239.0...247.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 650  
 Rack travel in mm : 20.0

Testing:  
 1st rack travel in: 12.00

Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.2

Testing:

Speed rpm : 100  
Minimum rack travel: 5.70  
Speed rpm : 300  
Rack travel in mm : 4.10...4.30  
Rack travel in mm : 2.00  
Speed rpm : 330...370

TORQUE CONTROL

Dimension a mm : 0.20  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 13.00...13.10  
2nd speed rpm : 700  
Rack travel in m: 13.50...13.70

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 13.30...13.40

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.80...10.00  
2nd pressure hPa : 110  
Rack travel in m: 10.20...10.30  
3rd pressure hPa : 470  
Rack travel in m: 11.90...12.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 230.0...236.0  
1000 s: (227.0...239.0)  
Aneroid pressure h: -

NO8

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 134.0...136.0  
1000 s: (131.0...139.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.00  
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 210.0...230.0  
1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.10...4.30  
Del.quantity cm<sup>3</sup>/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7889

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 g  
 Edition : 20.3.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 046 097  
 Injection pump  
 Pump designation : PES6P110A720RS3009  
 Governor  
 Governor design. : RQV275...1050PA262KR

Cust. part no. : \*

Customer-spec. information  
 Customer : MACK

Engine : ENDT 676

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 40

Inlet press., bar : 0.2

Opening  
 pressure, bar : 280...283

Test lines : 9 681 230 710

Outside diameter  
 x Wall thickness  
 x Length mm : 6.35X1.70X914.40

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

NO9

Rack travel in mm : 12.00...12.10

Del. quantity cm<sup>3</sup>/ : 13.2...13.8

100 s : (-)

Spread cm<sup>3</sup> : 0.3

100 s : (-)

2nd speed rpm : 275  
 Del. quantity cm<sup>3</sup>/ : 1.4...2.4  
 100 s : (-)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1050

Rack travel in mm : 15.00...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000  
 Del. quantity : 168.0...170.0  
 1000 : (166.0...172.0)

RATED SPEED

1st version

Control lever  
 position degrees: 62...70

Testing:

1st rack travel in: 16.40  
 Speed rpm : 1040...1060  
 2nd rack travel in: 11.90  
 Speed rpm : 1085...1115  
 3rd rack travel in: 4.00...9.60  
 Speed rpm : 1150  
 4th rack travel in: 1180  
 Speed rpm : 0.00...7.00  
 5th rack travel in: 1260  
 Speed rpm : -

LOW IDLE 1

Control lever  
 position degrees: 6...14

Testing:

Speed rpm : 200  
 Minimum rack trave: 6.00  
 Speed rpm : 300  
 Rack travel in mm : 3.20...4.40  
 Rack travel in mm : 3.00  
 Speed rpm : 385...415  
 Speed rpm : 500  
 Maximum rack trave: 2.70  
 Speed rpm : 680



Rack travel in mm : -

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000  
Rack travel in m: 13.70...13.80  
2nd speed rpm : 800  
Rack travel in m: 13.90...14.00  
3rd speed rpm : 600  
Rack travel in m: 14.60...14.70

#### FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800  
Del.quantity cm3/ : 182.0...189.0  
1000 s: (180.0...191.0)  
Speed rpm : 600  
Del.quantity cm3/ : 214.0...219.0  
1000 s: (212.0...221.0)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: ?  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...175.0  
1000 s: (-)

#### LOW IDLE

Speed rpm : 275  
Del.quantity cm3/ : 14.0...24.0  
1000 s: (-)

Remarks:

: MACK # 313 CC 597 P7

See VDT-I-MAC 002

PLE dimension = 0.670" - 0.744"

The test specifications apply to testing of the injection-pump assembly with the genuine engine/nozzle-and-holder assembly

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 g1  
 Edition : 20.3.90  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 046 105

Injection pump  
 Pump designation : PES6P110A720RS3009  
 Governor  
 Governor design. : RQV275...1050PA262KR

Cust. part no. : \*

Customer-spec. information  
 Customer : MACK

Engine : ENDT 676

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 40

Inlet press., bar : 0.2

Opening  
 pressure, bar : 300...303

Test lines : 9 681 230 710

Outside diameter  
 x Wall thickness  
 x Length mm : 6.35X1.70X914.40

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.00...12.10

Del.quantity cm<sup>3</sup>/ : 13.2...13.8

100 s : -

Spread cm<sup>3</sup> : 0.3

100 s : (-)

2nd speed rpm : 275  
 Del.quantity cm<sup>3</sup>/ : 1.4...2.4  
 100 s : (-)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1050  
 Rack travel in mm : 15.00...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Del.quantity : 168.0...170.0  
 1000 : (166.0...172.0)

RATED SPEED

1st version  
 Control lever  
 position degrees: 62...70

Testing:  
 1st rack travel in: 16.40  
 Speed rpm : 1040...1060  
 2nd rack travel in: 11.90  
 Speed rpm : 1085...1115  
 3rd rack travel in: 4.00...9.60  
 Speed rpm : 1150  
 4th rack travel in: 1180  
 Speed rpm : 0.00...7.00  
 5th rack travel in: 1260  
 Speed rpm : -

LOW IDLE 1

Control lever  
 position degrees: 6...14

Testing:  
 Speed rpm : 200  
 Minimum rack trave: 6.00  
 Speed rpm : 300  
 Rack travel in mm : 3.20...4.40  
 Rack travel in mm : 3.00  
 Speed rpm : 385...415  
 Speed rpm : 500  
 Maximum rack trave: 2.70  
 Speed rpm : 680

Rack travel in mm : -

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000

Rack travel in m: 13.70...13.80

2nd speed rpm : 800

Rack travel in m: 13.90...14.00

3rd speed rpm : 600

Rack travel in m: 14.60...14.70

#### FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800

Del.quantity cm3/ : 182.0...189.0  
1000 s: (180.0...191.0)

Speed rpm : 600

Del.quantity cm3/ : 214.0...219.0  
1000 s: (212.0...221.0)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: ?

Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 140.0...175.0  
1000 s: (-)

#### LOW IDLE

Speed rpm : 275

Del.quantity cm3/ : 14.0...24.0  
1000 s: (-)

Remarks:

: MACK # 313 CC 597 P7

See VDT-I-MAC 002

PLE dimension = 0.670" - 0.744"

The test specifications apply to testing of the injection-pump assembly with the genuine engine/nozzle-and-holder assembly

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 g2  
 Edition : 22.3.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 046 127  
 Injection pump  
 Pump designation : PES6P110A72ORS3009  
 Governor  
 Governor design. : RQV300/600...1050PA  
 300KR

Cust. part no. : \*

Customer-spec. information  
 Customer : MACK

Engine : ENDT (B) 676

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 40

Inlet press., bar : 1.5

Opening  
 pressure, bar : 300...303

Test lines : 9 681 230 710

Outside diameter  
 x Wall thickness  
 x Length mm : 6.35X1.70X914.40

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
 Phasing : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000  
 Rack travel in mm : 12.00...12.10

Del. quantity cm<sup>3</sup>/ : 13.5...14.1

100 s : (-)

Spread cm<sup>3</sup> : 0.4

100 s : (-)

2nd speed rpm : 275  
 Del. quantity cm<sup>3</sup>/ : 1.2...2.2  
 100 s : (-)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1070

Rack travel in mm : 15.00...17.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del. quantity : 162.5...165.5

1000 : (160.5...167.5)

RATED SPEED

1st version

Control lever

position degrees: 62...70

Testing:

1st rack travel in: 16.40

Speed rpm : 1060...1080

2nd rack travel in: 9.30

Speed rpm : 1135...1165

3rd rack travel in: 0.00...7.80

Speed rpm : 1200

4th rack travel in: 1280

Speed rpm : -

LOW IDLE 1

Control lever

position degrees: 8...16

Testing:

Speed rpm : 250

Minimum rack trave: 6.30

Speed rpm : 300

Rack travel in mm : 4.00...6.50

Rack travel in mm : 2.10

Speed rpm : 345...375

Speed rpm : 560

Maximum rack trave: 1.20

Speed rpm : 740

Rack travel in mm : -

## TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000  
Rack travel in m: 13.70...13.80  
2nd speed rpm : 900  
Rack travel in m: 13.80...13.90  
3rd speed rpm : 800  
Rack travel in m: 14.10...14.20  
4th speed rpm : 700  
Rack travel in m: 14.60...14.70  
5th speed rpm : 500  
Rack travel in m: 15.00...15.10

## FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 220.0...224.0  
1000 s: (218.0...226.0)

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: ?  
Speed rpm : 1090...1100

## STARTING FUEL DELIVERY

Speed rpm : 275  
Del.quantity cm<sup>3</sup>/ : 140.0...175.0  
1000 s: (-)

## LOW IDLE

Speed rpm : 275  
Del.quantity cm<sup>3</sup>/ : 14.0...24.0  
1000 s: (-)

Remarks:

: MACK # 313 CC 5104 P  
: 1

See VDT-I-MAC 002

PLE dimension = 0.670" - 0.744"

The test specifications apply to testing of the injection-pump assembly with the genuine engine/nozzle-and-holder assembly

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 12,0 c  
 Edition : 06.04.90  
 Replaces : 10.2.89  
 Test oil : ISO-4113

Combination no. : 0 402 046 219

Injection pump  
 Pump designation : PES6P120A32ORS426  
 EP type number : 0 412 026 039  
 Governor  
 Governor design. : RQV250...1100PA570  
 Governor no. : 0 421 813 295

Customer-spec. information

Customer : RVI

Engine : MIDS 063540

1st version kW : 195.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 650

---

Rack travel in mm : 10.30...10.40

---

Del.quantity cm<sup>3</sup>/ : 17.9...18.1  
 100 s: (17.6...18.4)

---

Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 4.5...4.7  
 Del.quantity cm<sup>3</sup>/ : 1.9...2.5  
 100 s: (1.6...2.8)

Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.50...1.60  
 2nd speed rpm : 800  
 travel mm : 4.70...4.90  
 3rd speed rpm : 1100  
 travel mm : 6.80...7.00

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1270  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 650  
 Aneroid pressure h: 700  
 Del.quantity : 179.0...181.0  
 1000 : (176.0...184.0)

Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
Control lever  
position degrees: 57...65

Testing:  
1st rack travel in: 8.10  
Speed rpm : 1160...1170  
2nd rack travel in: 4.00  
Speed rpm : 1230...1260  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 5...13

Testing:  
Speed rpm : 200  
Minimum rack travel: 5.70  
Speed rpm : 250  
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION  
Speed rpm : 275...400

TORQUE CONTROL  
Dimension a mm : 1.20  
Torque control curve - 1st version  
1st speed rpm : 650  
Rack travel in m: 10.30...10.40  
2nd speed rpm : 1100  
Rack travel in m: 9.00...9.20  
3rd speed rpm : 1020  
Rack travel in m: 9.30...9.50  
4th speed rpm : 890  
Rack travel in m: 9.90...10.10

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 700

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.30...8.5000  
2nd pressure hPa : 290  
Rack travel in m: 9.90...10.00  
3rd pressure hPa : 245  
Rack travel in m: 8.90...9.10

START CUT-OUT

Speed 1/min : 170 (190)

N16

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 164.0...170.0  
1000 s: (161.0...173.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 119.0...121.0  
1000 s: (116.0...124.0)

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8.10  
Speed rpm : 1160...1170

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 125.0...145.0  
1000 s: (121.0...149.0)

## LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.50...4.70  
Del.quantity cm<sup>3</sup>/ : 19.0...25.0  
1000 s: (16.0...28.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

Start-of-delivery mark 12° cam angle  
after start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 9,8 a 3  
 Edition : 01.02.90  
 Replaces : 1.9.89  
 Test oil : ISO-4113

Combination no. : 0 402 046 300

Injection pump  
 Pump designation : PES6P120A320RS419  
 EP type number : 0 412 026 037  
 Governor  
 Governor design. : RQV275...1100PA495-5  
 Governor no. : 0 421 813 446

Customer-spec. information  
 Customer : RVI

Engine : MIDR 062045

1st version kW : 191.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1100

---

Rack travel in mm : 9.00...9.10

---

Del.quantity cm3/ : 16.2...16.4  
 100 s: (15.9...16.7)

---

Spread cm3 : 0.5  
 100 s: (0.9)

---

2nd speed rpm : 275.0  
 Rack travel in mm : 4.60...5.00  
 Del.quantity cm3/ : 1.9...2.5  
 100 s: (1.6...2.8)

Spread cm3 : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.20  
 2nd speed rpm : 450  
 travel mm : 3.40...3.80  
 3rd speed rpm : 850  
 travel mm : 6.10...6.30  
 4th speed rpm : 1100  
 travel mm : 8.00...8.20

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1150  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Aneroid pressure h: 700  
 Del.quantity : 162.0...164.0  
 1000 : (159.0...167.0)

Spread cm3 : 5.00  
 1000 : (9.00)



RATED SPEED

1st version  
Control lever  
position degrees: 117...125

Testing:  
1st rack travel in: 8.00  
Speed rpm : 1170...1180  
2nd rack travel in: 4.00  
Speed rpm : 1225...1255  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 60...68

Testing:  
Speed rpm : 200  
Minimum rack trave: 6.50  
Speed rpm : 275  
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION  
Speed rpm : 285...400

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 9.00...9.10

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 7.80...8.00  
2nd pressure hPa : 220  
Rack travel in m: 8.60...8.70  
3rd pressure hPa : 195  
Rack travel in m: 8.10...8.30

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 700  
Del.quantity cm3/ : 150.0...156.0  
1000 s: (147.0...159.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 102.0...104.0  
1000 s: (99.0...107.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8.00  
Speed rpm : 1170...1180

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 275  
Rack travel in mm : 4.60...5.00  
Del.quantity cm3/ : 19.0...25.0  
1000 s: (16.0...28.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

:  
Start-of-delivery mark 10.5° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 8,8 d 5  
 Edition : 06.04.90  
 Replaces : 29.3.89  
 Test oil : ISO-4113

Combination no. : 0 402 046 328

Injection pump  
 Pump designation : PES6P120A32ORS419-2  
 EP type number : 0 412 026 048  
 Governor  
 Governor design. : RQ275/950PA753-1  
 Governor no. : 0 421 801 377

Customer-spec. information  
 Customer : RVI

Engine : MIDS/PS062045 FC

1st version kW : 144.0  
 Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 500

---

Rack travel in mm : 8.70...8.80

---

Del.quantity cm<sup>3</sup>/ : 11.9...12.1  
 100 s: (11.6...12.4)

---

Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 275.0  
 Rack travel in mm : 4.9...5.1  
 Del.quantity cm<sup>3</sup>/ : 1.7...2.3  
 100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2

Speed rpm : 525  
 Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 500  
 Aneroid pressure h: 700  
 Del.quantity : 119.0...121.0  
 1000 : (116.0...124.0)

Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

## RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 525  
 Rack travel in mm : 20.0

Testing:  
 1st rack travel in: 7.20  
 Speed rpm : 1015...1030  
 2nd rack travel in: 4.00

Speed rpm : 1150...1080  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 3.50

#### Testing:

Speed rpm : 200  
Minimum rack trave: 5.30  
Speed rpm : 275  
Rack travel in mm : 3.40...3.60  
Rack travel in mm : 2.00  
Speed rpm : 300...340

#### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 500  
Rack travel in m: 8.70...8.80  
2nd speed rpm : 950  
Rack travel in m: 8.00...8.20  
3rd speed rpm : 750  
Rack travel in m: 8.30...8.50

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 7.90...8.00  
2nd pressure hPa : 245  
Rack travel in m: 8.50...8.60

#### START CUT-OUT

Speed 1/min : 195 (215)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 139.0...143.0  
1000 s: (136.0...146.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 104.0...106.0  
1000 s: (101.0...109.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 7.20  
Speed rpm : 1015...1030

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 3.40...3.60

#### Remarks:

Start-of-delivery mark 9.5° cam angle  
after start of delivery cyl. 1

#### APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 8,8 d 6  
 Edition : 23.03.90  
 Replaces : 2.10.89  
 Test oil : ISO-4113

Combination no. : 0 402 046 329

Injection pump  
 Pump designation : PES6P120A32ORS419-2  
 EP type number : 0 412 026 048  
 Governor  
 Governor design. : RQ275/950PA843  
 Governor no. : 0 421 801 378

Customer-spec. information  
 Customer : RVI

Engine : MIDS/PS062045D/A

1st version kW : 129.0  
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 500

---

Rack travel in mm : 8.00...8.10

---

Del.quantity cm<sup>3</sup>/ : 10.5...10.7  
 100 s : (10.2...11.0)

---

Spread cm<sup>3</sup> : 0.5  
 100 s : (0.9)

2nd speed rpm : 275.0  
 Rack travel in mm : 3.5...3.7  
 Del.quantity cm<sup>3</sup>/ : 1.7...2.3  
 100 s : (1.4...2.6)

Spread cm<sup>3</sup> : 0.8  
 100 s : (1.2)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2

Speed rpm : 525  
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 500  
 Del.quantity : 105.0...107.0  
 1000 : (102.0...110.0)

Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 525  
 Rack travel in mm : 20.0

Testing:  
 1st rack travel in: 6.50  
 Speed rpm : 1015...1030  
 2nd rack travel in: 4.00  
 Speed rpm : 1040...1070

4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 3.6

Testing:  
Speed rpm : 200  
Minimum rack trave: 5.20  
Speed rpm : 275  
Rack travel in mm : 3.50...3.70  
Rack travel in mm : 2.00  
Speed rpm : 300...340

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 500  
Rack travel in m: 8.00...8.10  
2nd speed rpm : 950  
Rack travel in m: 7.40...7.50  
3rd speed rpm : 775  
Rack travel in m: 7.60...7.80

#### START CUT-OUT

Speed 1/min : 210 (230)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 950  
Del.quantity cm3/ : 126.0...130.0  
1000 s: (123.0...133.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 6.50  
Speed rpm : 1015...1030

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...165.0  
1000 s: (131.0...169.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 3.50...3.70

Remarks:

N22

:  
Start-of-delivery mark 9.5° cam angle  
after start of delivery cyl. 1

#### APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 8,8 m  
 Edition : 16.02.90  
 Replaces : 5.8.88  
 Test oil : ISO-4113  
 Combination no. : 0 402 046 334  
 Injection pump  
 Pump designation : PES6P120A32ORS515  
 EP type number : 0 412 026 053  
 Governor  
 Governor design. : RQV300...1150PA527K  
 Governor no. : 0 421 815 164

Customer-spec. information  
 Customer : RVI

Engine : MIDR 062030B

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150  
 Rack travel in mm : 10.20...10.30  
 Del.quantity cm<sup>3</sup>/ : 14.6...14.8  
 100 s: (14.3...15.1)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)  
 2nd speed rpm : 600.0  
 Rack travel in mm : 4.6...4.8  
 Del.quantity cm<sup>3</sup>/ : 1.8...2.4  
 100 s: (1.5...2.7)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.70...2.10  
 2nd speed rpm : 900  
 travel mm : 5.80...6.20  
 3rd speed rpm : 1150  
 travel mm : 7.40...7.60

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1225  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1150  
 Del.quantity : 146.0...148.0  
 1000 : (143.0...151.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 115...123

Testing:  
1st rack travel in: 9.20  
Speed rpm : 1235...1245  
2nd rack travel in: 4.00  
Speed rpm : 1305...1335  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 62...70

Testing:  
Speed rpm : 200  
Minimum rack trave: 6.30  
Speed rpm : 300  
Rack travel in mm : 4.70...5.00

CONSTANT REGULATION  
Speed rpm : 320...440

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 10.20...10.30  
2nd speed rpm : 750  
Rack travel in m: 9.20...9.30  
3rd speed rpm : 500  
Rack travel in m: 8.60...8.80  
4th speed rpm : 350  
Rack travel in m: 8.40...8.80

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 750  
Del.quantity cm3/ : 123.0...129.0  
1000 s: (120.0...132.0)  
Speed rpm : 500  
Del.quantity cm3/ : 69.0...75.0  
1000 s: (66.0...78.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: -1.00  
Speed rpm : 1235...1245

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : -5.20...-5.60  
Del.quantity cm3/ : 13.0...19.0  
1000 s: (10.0...22.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

Start-of-delivery mark 10.5° cam angle  
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 o  
 Edition : 12.02.90  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 046 339

Injection pump  
 Pump designation : PES6P110A720LS524  
 EP type number : 0 412 016 073  
 Governor  
 Governor design. : RQ750PA661-1  
 Governor no. : 0 421 801 330

Customer-spec. information  
 Customer : MAN

Engine : D2866E

1st version kw : 125.0  
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.40...13.50

Del.quantity cm3/ : 14.3...14.6

100 s: (14.0...14.8)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 6.0...6.2

Del.quantity cm3/ : 1.5...2.0

100 s: (1.2...2.2)

Spread cm3 : 0.4

100 s: (0.7)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 143.0...146.0

1000 : (140.5...148.5)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Testing:

1st rack travel in: 12.40

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 800...813

4th rack travel in: 950

Speed rpm : 0.00...1.00

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 90.0...110.0

1000 s: (86.0...114.0)



Remarks:

: MAN-NR. 2-7966

APPLICATION

Generator set



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 9,8 k  
 Edition : 06.04.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 046 340  
 Injection pump  
 Pump designation : PES6P120A320RS525  
 EP type number : 0 412 026 058  
 Governor  
 Governor design. : RQV300...1050PA955  
 Governor no. : 0 421 813 856

Customer-spec. information  
 Customer : RVI

Engine : MIDS062045J

1st version kW : 160.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 9.20...9.30

Del.quantity cm<sup>3</sup>/ : 13.5...13.7

100 s: (13.2...14.0)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.3...5.5

Del.quantity cm<sup>3</sup>/ : 1.5...2.1

100 s: (1.2...2.4)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1050

travel mm : 8.00...8.20

2nd speed rpm : 300

travel mm : 1.10...1.50

3rd speed rpm : 430

travel mm : 3.40...4.00

4th speed rpm : 1400

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1075

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 135.0...137.0

1000 : (132.0...140.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 298...306

Testing:  
1st rack travel in: 8.20  
Speed rpm : 1120...1130  
2nd rack travel in: 4.00  
Speed rpm : 1175...1205  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 244...252

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.80  
Speed rpm : 300  
Rack travel in mm : 5.40...5.30

CONSTANT REGULATION  
Speed rpm : 310...430

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 126.0...132.0  
1000 s: (123.0...135.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8.20  
Speed rpm : 1120...1130

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.30...5.50  
Del.quantity cm<sup>3</sup>/ : 15.0...21.0  
1000 s: (12.0...24.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

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